DOCUMENT RESUME

ED 214 661 PS 012 762

TITLE Integrated Nutrition Education Junior High.
INSTITUTION Illinois State Board of Education, Springfield.
SPONS AGENCY Department of Agriculture, Washington, D.C.
PUB DATE [80]
NOTE 186p.; For related documents, see ED 196 536-537.

EDRS PRICE MF01/PC08 Plus Postage.
DESCRIPTORS Instructional Materials; *Integrated Activities; *Interdisciplinary Approach; Junior High Schools; *Learning Activities; Lesson Plans; *Nutrition Instruction; State Curriculum Guides; Teaching Guides
IDENTIFIERS *Illinois

ABSTRACT

This collection of nutrition lessons has been produced so that junior high school teachers of various subject areas may offer an occasional lesson on a nutrition topic. The objectives of each nutrition lesson are consistent with concepts which the Nutrition Education and Training Program in Illinois has identified as the most important nutrition messages for students to comprehend. Each lesson provides a statement of objectives, notes to the teacher, and a list of class activities. Additionally, each lesson specifies the month of the school year and the curriculum areas in which the activities are to be implemented. Accompanying each lesson are materials, called "helps," that supplement the lesson by providing additional facts, reading material, and learning activities. Related materials, such as a chart of revised recommended dietary allowances and a list of sources of free and low cost nutrition education materials, are included in eight appendices. (Author/RH)

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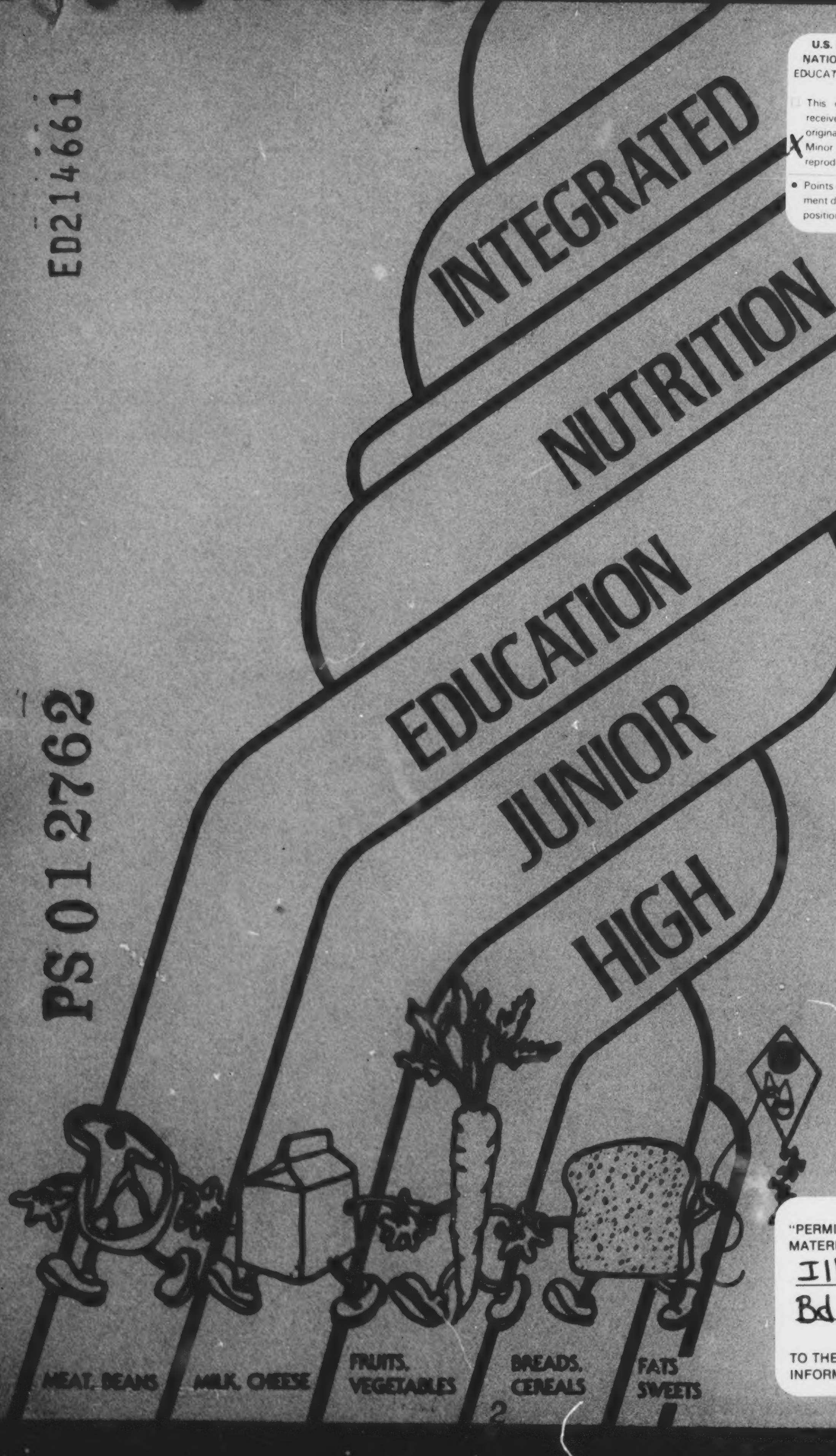
INTEGRATED NUTRITION EDUCATION JUNIOR HIGH


MEAT, BEANS
MILK, CHEESE
FRUITS, VEGETABLES
BREADS, CEREALS
FATS SWEETS
2

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FOREWORD

The Illinois State Board of Education is pleased to make available this publication of suggested curriculum activities on the topic of nutrition education.

This publication has been developed as a guide to assist educators in the planning and implementing of nutrition education activities into the existing curriculum areas. It is not exclusive of all available nutrition education activities that could be implemented but is representative of many varied activities.

This publication was developed by the Colorado NET program which extended permission to reproduce the contents for our state's use. We are appreciative of their assistance.

Donald G. Gill

Donald G. Gill
State Superintendent of Education

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INTRODUCTION

The White House Conference on Food, Nutrition, and Health, held in 1969, emphasized the need of a nutrition education program that begins in early childhood and continues through the secondary school, to help children acquire positive attitudes toward food and to help older children assume responsibility for their diet and to prepare them for adulthood and their future role as parents.

Health problems which are affected by nutrition are common throughout our country. These include obesity, heart disease, dental caries, high blood pressure, kidney disease, and diabetes. There is still much to be learned about the specific role of nutrition both in the development and treatment of these diseases. However, we do know that sound nutritional practices can prevent many of these health problems.

Changing socio-economic conditions and new food technology both affect the diet of our country. Poverty limits the possibility of obtaining a balanced diet. Changes in life-style cause changes in food consumption patterns as more meals are eaten away from home. The increasing amount of new food products on the market - many of them "convenience" foods - leads to uncertainties about their nutrient content. These conditions also point out the need for further nutritional education.

All evidence seems to indicate that young people cannot be expected to select by instinct a diet that meets their nutritional needs. Good food habits are the result of a learning experience, whether at school, at home, or elsewhere. We challenge every teacher to make their contribution in making that learning experience a positive one.

These lessons have been written and activities designed to make it possible for teachers in every field to have an occasional lesson on a nutrition topic. H.E.L.P.'s (Here's Extra Learning Possibilities) are included with each lesson which should assist the teacher to achieve the desired lesson objective.

We hope both you and your students have fun while pursuing together the overall objective of optimum health.

ILLINOIS NUTRITION EDUCATION AND TRAINING ACT CONCEPTS

The Nutrition Education and Training Program in Illinois has identified these concepts as most important nutrition messages for students to comprehend. Please introduce and then summarize learning activities with one or more of them. If displayed on a large chart in the room, the concept(s) related to each activity can be easily pointed out by the students.

Physiological Facts

Nutrition is the way the body uses food. We eat food to live, to grow, to keep healthy and well, and to get energy for work and play.

Nutrients

Food is made up of different nutrients that work together and interact with body chemicals to serve the needs of the body. Many kinds and combinations of food can provide a nutritionally adequate diet.

Food Handling

The way food is handled influences the amounts of nutrients in food, its safety, quality, appearance, taste, acceptability, and cost.

Life Cycle

All persons throughout life have need for the same nutrients, but in varying amounts. The amount of nutrients needed is influenced by age, sex, activity and state of health.

Social/Psychological Aspects of Food

Food can be chosen to fulfill physiological needs and at the same time satisfy social, cultural, and psychological wants.

Food Technology

The nutrients, singly and in combinations of chemical substances simulating natural foods, are available in the market; these may vary widely in usefulness, safety of use and economy.

Nutrition and Society

Food plays an important role in the physical and psychological health of the society or a nation just as it does for the individual and family.

References:

Ullrich, Helen D. and Briggs, George M., "Improving Education Concerning Nutrition: The General Public," 1969 White House Conference on Food Nutrition and Health, pp. 175-187.
Mayer, Jean, ed. U.S. National Policies in the Seventies, San Francisco, W. H. Freeman and Company, 1973.
These concepts evolved from the Interagency Committee on Nutrition Education, 1964.

NUTRITION EDUCATION OBJECTIVES AND RELATED CONCEPTS

The following information is provided to show the interrelationships which exist between the Nutrition Education concepts deemed important by the Illinois program and the objectives sought by the activities suggested in this guidebook.

OBJECTIVE	PAGE	RELATED CONCEPT
September		
The student will become aware that the proper handling of food, including sanitary conditions, correct storage and sufficient cooking, are all important in the final outcome of the food's nutritive value, safety, appearance and cost.	9	Food Handling; Food Technology; Nutrition and the Society
The basis of a strong and healthy body is eating a well balanced diet.	17	Physiological Facts; Nutrients; Life Cycle
October		
The student will recognize the effect of alcohol and smoking on his/her health.	25	Physiological Facts; Nutrients; Social/Psychological Aspect of Food
To encourage students to eat more vegetables and fruits (especially fresh ones) and to understand their value to the body.	41	Physiological Facts; Nutrients; Life Cycle; Food Handling
November		
The student will learn that eating lower on the food chain conserves the world's resources and is just as healthful.	47	Physiological Facts; Nutrients; Life Cycle; Nutrition and the Society
Students will learn the vital lifetime role of milk in good nutrition.	55	Physiological Facts; Nutrients; Life Cycle

OBJECTIVE	PAGE	RELATED CONCEPT
December		
Students will become aware that most Americans eat too much fat which can lead to health problems of overweight and heart disease.	65	Physiological Facts; Nutrients; Life Cycle; Social/Psychological Aspect of Food; Nutrition and the Society
The student will learn that life styles influence eating habits and nutrition. Although basic nutritional needs are the same, the amount needed will vary with age, sex, and activity.	71	Physiological Facts; Nutrients; Life Cycle; Social/Psychological Aspects of Food
January		
The student will learn that the pregnant teenager has special dietary needs.	79	Physiological Facts; Nutrients; Life Cycle
The student will become more aware of the additives commonly found in food and better able to decide which are beneficial and which might be harmful.	87	Physiological Facts; Nutrients; Food Handling; Food Technology; Nutrition and the Society
February		
The student will become aware of the information available on the label of a food container. He/she will be able to utilize this information by applying sound nutritional principles in dietary selections.	97	Physiological Facts; Nutrients; Life Cycle; Food Handling; Food Technology
The student will identify food misconceptions that have been promoted and explain why they are inaccurate.	109	Physiological Facts; Nutrients; Life Cycle; Social/Psychological Aspects of Food
March		
The student will realize the importance of protein in his/her diet.	119	Physiological Facts; Nutrients; Life Cycle; Food Handling; Social/Psychological Aspects of Foods; Nutrition and the Society

OBJECTIVE	PAGE	RELATED CONCEPT
The student will learn the importance of vitamins in the diet and sources of each.	131	Physiological Facts; Nutrients; Life Cycle; Food Handling; Food Technology
April		
Snacks can be delicious and nutritious too.	145	Physiological Facts; Nutrients; Life Cycle; Social/ Phychological Aspects of Food
Understanding nature's most perfect protein food--the egg.	149	Physiological Facts; Nutrients; Life Cycle
May		
The student will learn to analyze his/her own diet and how to make a choice to improve it.	151	Physiological Facts; Nutrients; Life Cycle; Social/Psychological Aspects of Food
The student will investigate the advisability of too frequent visits to fast food restaurants but also will learn to choose wisely when eating at such.	161	Physiolgical Facts; Nutrients; Life Cycle; Social/Psychological Aspects of Food; Food Handling

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FOOD SAFETY FIRST
or
"WASH HANDS BEFORE DINNER"

English
Health
Industrial Arts
Math
Science

September

Objective: The student will become aware that the proper handling of food, including sanitary conditions, correct storage and sufficient cooking, are all important in the final outcome of the food's nutritive value, safety, appearance and cost.

To The Teacher:

Unsanitary conditions, improper storage and insufficient cooking of foods can be hazardous to health. This lesson will make students more aware of the dangers of improper food handling. Read (HELP #1) "Senseless Sal" with your students to get their reactions to the obvious and maybe not so obvious mistakes Sal and Dill make. Then read through (HELP #2) Food Spoilage and Food Borne Illnesses before beginning the activities.

Activities:

1. Improper food handling can cause illness. Write a report on various types of food-borne illnesses. A call to the county health department may be a very good resource to check on the recent reported food poisonings in your area. Include in your report safety measures to be taken when handling foods and those to handle with special care.

2. Demonstrate sanitary vs. unsanitary conditions affect food.

   Materials Necessary

   2 plastic cups (2 petri dishes)
   Saran Wrap
   nutrient agar (made with beef broth and gluten)

Directions

Wash hands, prepare 2 petri dishes with agar in each, wipe hands on one petri dish. Return later, do not clean hands, wipe them on the 2nd petri dish. Incubate, inspect, and compare the two dishes. Discuss the results.

3. Close to Home. Make a list of places in the home where food is stored; check on how much it costs your family per day, week or month to inefficiently store food. (Checking the garbage can is an excellent way to get this information.) What types of food were most commonly thrown out - before cooking - after cooking (leftovers)? Studies have shown that families waste about $100 per year dumping edible food.* Discuss how this waste can be AVOIDED. How can foods be recycled?

4. Inefficient food storage and care can damage appearance, taste and value of food.

   Materials Necessary

   Fresh foods such as lettuce, other vegetables and fruits
   Leftovers such as meat, gravies, etc.
   Microscope

   Directions

   Leave the foods in various containers for several days. Some may be refrigerated; some may be left covered and others uncovered.
   Using the microscope compare.
   Discuss your findings.

5. Processing and Recycling Foods

   a. Discuss ways to recycle foods that normally go to waste in your home or elsewhere.
   b. Involve the elderly. Ask for suggestions on what can be done with the usual throw aways - such as the outer onion skins, beefstock from a roast, etc. What ideas do they give for recycling?
   c. Don't throw away overripe fruits or an over abundance of garden vegetables - dry them for snacks, or preserve for later eating. See HELP 3 Drying Fruits & Vegetables then construct a simple food dryer from directions given.

* This material borrowed from the Energy, Food & You Curriculum Guide. A program of the Washington State Offices of Environmental Education (N.W. Section) and Health Education.

6. Discover the results of inefficient food storage.

   a. Visit a local supermarket to find out what types of storage methods and maintenance are used to keep foods fresh, attractive, and appealing.
   b. What guidelines should customers use in choosing fruits, vegetables, meats, canned goods, and boxed foods? What losses are experienced by the supermarket by inefficient storage practices. How much does this cost over a period of time (a month/one year?)

SOURCES:

This material borrowed from the Energy, Food & You Curriculum guide. A program of the Washington State Offices of Environmental Education (N.W. Section) and Health Education.

Food Conservation & Safety , 4-H Members Manual, CSU Extension, Fort Collins, Colorado, September 1979, pps. 4-9.

"Keeping Food Safe To Eat", Agricultural Research Service, U.S. Department of Agriculture, Home & Garden Bulletin #162, U.S. Government Printing Office, 1975

"Drying Fruits & Vegetables," Pat Kendall, Colorado State University, 1977.

SENSELESS SAL

HELP #1

This is a story about Senseless Sal and her daughter, Dill. Sal and Dill do many things which are unhealthy. Listen to see if you can spot them.

(Senseless Sal is in the kitchen, daughter Dill is in the backyard)

Sal: Dill, Dill, stop playing with that dog and come in for lunch.

Dill: What are we having? Oh! Tuna salad, we had that last night for supper. I put the leftovers away before I went to bed.

Sal: Wash your hands before you eat.

Dill: Do I have to?

Sal: I suppose not, a few germs never killed anyone!

Dill: What will we have for supper tonight?

Sal: I think we'll have fried chicken. If I take it out of the freezer now and put it on the counter, it will be thawed out by the time I want to fix it. I need to go to the store this afternoon.

Dill: Can I go with you? You said we could shop for a new dress.

Sal: We'll go to the grocery store first and then to the department store.

Dill: Should I put this mayonnaise away?

Sal: Just put it on the counter and let's get going. I'll put it in the refrigerator after while.

(Senseless Sal and Dill enter the supermarket)

Sal: Now, let me see, I need milk, fresh pork, and frozen vegetables. I'll get those first and then go through the store and get anything else I need.

(As they push the carts through the aisles...)

Dill: Look at this funny can of mushrooms, the two ends look like they are pushed out.

Sal: Just put it back on the shelf and let's go check out. It's a warm day and the department store is air-conditioned. We can take our time there.

(After two hours of shopping, Sal and Dill return home.)

Sal: I'll get that chicken started before I put these groceries away.

Dill: After you start the chicken, can we make some cookies?

Sal: Sure, you get out the ingredients. Did you wash off the counter?

Dill: No.

Sal: Oh, never mind, it looks clean.

Dill: Is this cracked egg okay to use?

Sal: We'll use it. Can you finish the lunch dishes while I start the cookies?

Dill: The water is cold.

Sal: That's okay, if it's got plenty of soap in it. Just wipe out that bowl that the chicken was in. I need it to mix the cookie dough.

Dill: I want to eat the dough that is left in the bowl.

Sal: Okay! There, now the cookies are baking and I can get those groceries put away. I don't have a covered dish to put this pork in so I'll just put it on a plate in the fridge.

Dill: What else will we have for supper?

Sal: I guess we'll have a quart of those home canned green beans Grandma put up last summer. We better eat this one first, the lid seems to be leaking.

Dill: The cookies are done.

Sal: Good, soon your Father, Hopeless Hal, will be home. He went to the doctor. He's suffering from stomach-aches and he had diarrhea again.

HELP #2

FOOD SPOILAGE AND FOOD-BORNE ILLNESSES

NAME	CHARACTERISTICS	FOOD INVOLVED	PREVENTION	CHARCTERISTICS OF ILLNESS
Molds	Fuzzy looking microorganisms; which grow in damp dark places	May be found on the surface of breads, cheeses, vegetables and fruits	Microorganisms is destroyed by bringing food to boiling temperature.	None noted
Yeasts	Microorganisms that produce fermentation with formation of alcohol & carbon dioxide	May be found in foods fermented with yeast such as vinegar, apple cider, beer, wine and bread.	Microorganisms is destroyed by bringing food to boiling temperature.	None noted
Salmonellosis	Salmonella organisms are in intestinal tracts of humans and animals, on the surface of meats, poultry, raw eggs and contained in unpasteurized milk products. These thrive at room temperature and unsanitary areas.	May be found in eggs or egg based foods, poultry, pork, processed meats, fish, cream dessert fillings, milk products, and sandwich and salad fillings such as tuna, chicken or potato.	Watch personal and kitchen sanitation. Cook foods to 165 F (74 C) to destroy microorganisms.	Occurs within 8-72 hours after eating the contaminated food. Severe headache, vomiting abdominal cramps and fever are usually present.
Clostridium Perfringins	Clostridium Perfringins organisms are found in soil, unsafe water, unprocessed foods and the intestinal tracts of humans and animals.	May be found on cooked, cooled, and reheated meats, poultry, stews, casseroles and gravies.	Keep hot food hot, 140 F (60 C) and cold food cold. 45 F (7 C)	Occurs 8-22 hours after eating the contaminated food. Lasts 24 hours. Diarrhea and acute abdominal cramps are usually present.
Staphlococcal Intoxication Staph Poisoning	Staphlococcus aureus, bacterium is found on the skin and or in the nose and throat of most people. Carriers are those with colds, sinus infections and infected wounds.	May be found on protein food handled carelessly during preparation. Processed meats, meat salads such as tuna, chicken, ham or eggs, custards and potato salads are foods likely to be contaminated.	Microorganism is destroyed by heating food to 165 F (74 C) unless the toxin had formed before the bacteria was destroyed. Toxins cause illness if large amounts are consumed.	Occurs 1 1/2-6 hours after eating the contaminated food. Nausea, abdominal cramps, vomiting, and diarrhea are usually present. Lasts 20 to 48 hours and is seldom fatal.
Botulism	Clostridium botulinum is a deadly organism which is found on decaying organic matter, soil, fruits, and vegetable skins.	May be found on home processed canned foods especially low acid-vegetables like beans, peas and corn. May also appear in meats and fish.	Low acid foods must be canned in a pressure cooker at 240 F (116 C) to destroy botulism spores. All home canned vegetables and meast should be boiled 15 to 20 minutes before eating.	Occurs within a few hours to several days after the contaminated food is eaten. Vomiting and diarrhea are usually present. The nervous system is attacked which causes difficulty in swallowing, speaking, breathing, blurred vision, double vision. Victims must have early treatment with antitoxin which lowers the risk of death.

Service
in
Action
colorado state university extension service

Drying fruits and vegetables—

HELP #3

sun drying, oven drying and room drying

Pat Kendall [1]

no. 9.309

Quick Facts

Successful drying depends on heat, air dryness and air circulation.

Fruits and vegetables should be prepared and pretreated before drying.

Drying trays may be constructed of wood, stainless steel screening, and other materials.

Food should be protected from insects and dust by fastening screening or net over the tops of trays.

Oven drying is faster than sun drying but can only be done on a small scale.

Gas or electric ovens may be used to dry foods, but the temperature and ventilation must be maintained.

In dry climates, some foods may be dried in a warm room.

Sun Drying

Successful sun drying depends on heat, air dryness and air circulation. The high plains area of Colorado has an excellent climate for sun drying due to low humidity and light rainfall. Foods require from 12 hours to 10 days of sun drying, depending on size of the food, heat of the sun and amount of moisture in the air.

Fruits and vegetables should be washed, peeled, cored and pretreated. (See Service in Action sheets 9.308, 9.310, 9.312 for pretreatment methods.) Cut vegetables in small pieces so they will dry quickly. Slice fruits thinly and uniformly.

Spread prepared foods on drying trays and place trays facing the sun, either flat or raised on one side. Enclose trays on both sides with netting to protect food from insects. Trays also should be lined with cheesecloth to separate food from metal if screens are used.

Trays should be raised off the ground, placed on a roof or hung to protect them from dust and animals or insects.

Food also may be dried on clean sheets laid on tables benches or a low roof. Avoid sun-drying foods near a well traveled road or on days when air pollution levels are high.

Food should be stirred gently several times each day so it will dry evenly, and trays should be brought indoors at nightfall to protect the food from dew.

At the end of the first day, begin testing food for dryness after it has cooled. If not fully dried, place food in the sun for a second or third day or until fully dry.

Oven Drying

Oven drying is faster than sun drying. Fruits dry in 6 to 24 hours: vegetables require 3 to 15 hours. In addition, the food is not exposed to insects or dust. However, oven drying is done on a small scale and is more expensive than sun drying.

Prepare fruits and vegetables as indicated in Service in Action sheet 9.308. (See also Service in Action sheet 9.310.)

Either a gas or an electric oven may be used for controlled oven drying. An oven can take up to approximately 6 pounds (2.7 kg) of fruits or vegetables.

Oven drying needs close watching. Never go off and leave food drying in an oven. The gas pressure may change in a gas oven. Be careful that gas flames do not extinguish or trays do not catch fire during drying.

Proper temperature and ventilation are very important in oven drying. A too-low temperature at the beginning may cause food to sour: a too-high temperature may cause fruit and vegetable cells to burst or the product may harden on the surface, making drying difficult.

Regulate oven temperature by means of the oven thermostat and by propping open the oven door during drying. The open door also allows moist air to escape. Older gas ovens may need an 8-inch (20.3 cm) opening. Newer gas ovens and electric ovens usually need about a 1-inch (2.5 cm) opening at the top. The temperature should be maintained at 140° to 150°F (60°-65.6°C).

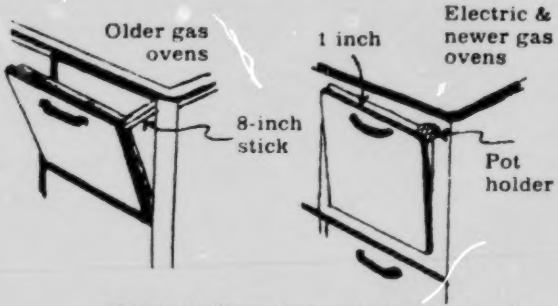

Figure 1: Oven door positions.

Locate the lowest oven rack about 3 inches (7.5 cm) from the oven floor.

Metal screens on drying trays should be covered with a thin, open-weave fabric so food won't stick or discolor. Then food should be spread evenly on drying trays. Lighter loads dry faster. When using a gas oven

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[1] *Pat Kendall, CSU extension assistant professor, foods and nutrition (revised 7/1/77)*

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To simplify technical terminology, trade names of products and equipment occasionally will be used. No endorsement of products named is intended nor is criticism implied of products not mentioned.

with floor corners cut out, avoid spreading food into the corners of trays to prevent scorching.

Stack two or three loaded trays together on an oven rack; insert blocks between trays so that air can circulate between them.

Place an oven thermometer on the lowest tray and check the oven temperature frequently to be sure it remains near 150°F (65.5°C). Top and bottom trays dry fastest. Shift trays every half hour and turn trays front to back. Stir food often if it is more than one layer deep; turn over large pieces of fruit about half way through the drying period.

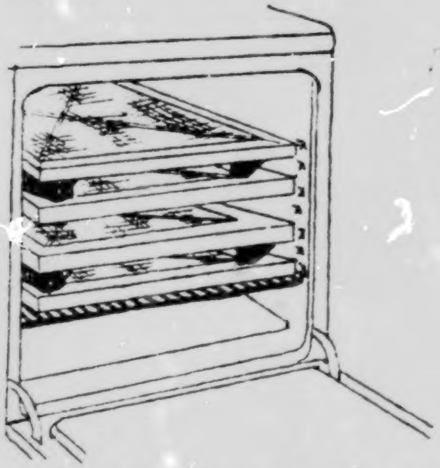

Figure 2: Tray arrangement for oven drying.

While drying, food should be moist to the touch and cooler than the air around it. If the food is near air temperature and not moist to touch it is too dry.

Remove a few pieces of food occasionally and allow to cool before testing for dryness. Hot food always will appear softer and less dry than when cold. Test for dryness by squeezing a handful of food. If no moisture is left on the hand and if foods spring apart when released, the produce is dry.

Pieces of food around edges of trays may dry first and should be removed first. Food scorches easily toward the end of the drying time. Therefore, it may be wise to turn off heat when drying is almost complete and open the door wide for an additional hour or so.

Room Drying

In dry climates, some foods can be dried satisfactorily in a warm room such as the attic or kitchen. Hang herbs rootside up; cover them with paper bags if they need to be protected from dust. String apple rings, pumpkin rings and red chili peppers on cords and hand near the ceiling.

Trays of fruits and vegetables that have been half-dried in the sun or oven can finish drying in a warm room. Stack trays with 6 inches (15.2 cm) of air space between them. Open screened windows to allow free circulation of air and force a draft across food with an electric fan.

Solar Heaters and Dehydrators

Solar and thermostatically controlled heaters and dehydrators also may be used to dry foods. Both can be purchased or home constructed at various costs. Cold frames, used by gardeners for large sets, work well as solar dryers. Thermostatically controlled dehydrators usually consist of a controlled source of heat and a forced air circulation to carry away moisture. Because of initial investment, such dehydrators are best reserved for persons who dry large amounts of food.

Drying Trays

Selection or construction of trays for drying can be a simple or involved project depending on the amount and type of food to be dried and the end-product desired by the drier. Good air circulation without reaction between food and trays are prime considerations in selecting drying trays. For small amounts of food and trial runs, cheesecloth stretched over oven racks, cake racks, broiler racks and cookie sheets can be used.

For larger and more dedicated projects, shallow wooden trays with slatted, perforated or woven bottoms should be considered. These can be used outdoors for sulfuring and sun drying or indoors for oven or room drying. Wooden fruit crates can be used or tray frames can be constructed from soft lumber. Tray bottoms can be made from thin wooden slats or dowels placed ¼" to ½" (6.35-12.7 cm) apart, strong curtain netting or stainless steel screening.

Galvanized screening should not be used as it has been treated with zinc and cadmium which can cause a dangerous reaction in contact with acid foods. Other metals also are not advisable as they may discolor and corrode with use. If used, they should be lined with cheesecloth to separate the food from the metal. A cheesecloth lining also helps keep sugar-rich foods from sticking to the trays and pieces of food from falling through.

To insure cleanliness, wash trays in hot, sudsy water with a stiff brush, rinse in clear water and air dry thoroughly after each use. A light coat of fresh vegetable oil will help protect the wood and make it easier to clean.

Trays for sun drying should be no larger than can be handled easily. Suggested size is 14" x 24" x 1" (or 1½") (35.6 cm x 60.9 cm x 2.5 cm).

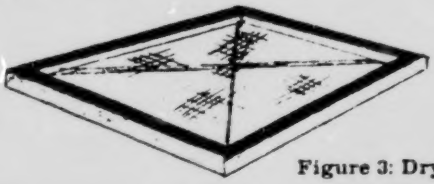

Figure 3: Drying tray.

If trays are used in an oven, they should be 1½ inches (3.8 cm) smaller in length and width than the oven dimensions to allow for circulation of air.

Blocks of wood one inch (2.5 cm) or more in height will separate trays for good air circulation.

For sun drying, polyester voil, organza, cheesecloth or screening should be placed on both sides of the tray after they are filled to protect food from insects.

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"PICK A WINNING TEAM"

STARRING GOOD NUTRIENTS AND THE BASIC FOUR

Art
Debate
Drama
English 1
Health/PE
Home Economics

September

Objective: The basis of a strong and healthy body is eating a well-balanced diet.

To The Teacher:

One basic condition for athletes to maintain top physical performance is to have optimal nutrition. To achieve this, athletes and non-athletes alike, must have a diet that supplies adequate quantities of water, protein, fat, carbohydrates , vitamins and minerals.

Today with the advent of special athletic food and drink, there are many misconceptions based upon poor nutrition which have been fostered by coaches and trainers to improve endurance and performance. These dietary formulas do have some psychological advantages for the athlete but no sound basis of nutrition. It is therefore very necessary to stress to young athletes (non-athletes, too) that the new "wonder foods" are no substitute for hard work in training and a good balanced nutritional diet so necessary for vitality and health.

Begin this unit by having the class read (HELP #1) General Diet and Food Preparation and answer the eight True-False questions about athletes.

Activities:

Strong healthy people are the result of well balanced diets.

1. Class discussion. What have you heard to be true of diets and food fads for athletes? Which seem wrong? Which right? Discuss the relation of food to being fit or unfit. Share examples of people you know personally who fall into either category. What is the relationship of calories to physical activity? Explain what might have happened when an athlete experiences "second half slump". Can this be related to "second hour slump" in school? Does it happen to you?

2. Divide the class into smaller discussion groups each headed by a moderator. Have the group discuss this topic: A well balanced diet is a must for the athlete versus eating properly doesn't matter, athletic prowess is due to training. After 8-10 minutes, have the moderator of each group give a summary of his group's conclusions.

3. Choose sides. Debate the above discussion topic.

Everybody can star with good nutrition.

4. Invite the school's food service Director to talk about nutrition for teens. What does the school food service do to promote it? What are her (his) views on nutrition for the athlete? If more convenient, send a team of reporters to interview the food service Director. Specific questions can be prepared by the entire class then the reporters can share the answers with the class after the interview.

5. Plan an athletic banquet. Include meal components, decor, centerpieces and invitations. Design a short program - perhaps a sketch on Nutrition Pays off for Athletes. Give the program for the class.

6. Read (HELP #2) Specific Diets for Specific Sports. Design a week long diet for a sport of your choice. Include helpful tips regarding specific foods to eat and not to eat, daily, as well as prior to sports competition. To be sure the diet contains the right foods, check against the Basic 4 Food Groups, Significant Food Sources and Recommended Number of Servings.

a. Show your diet to athletes and coaches at your school. How does your diet rate with them? Should you make some additions or subtractions? Discuss your findings with the class.

b. Design a bulletin board using several of the sports diets as the basis. Divide the board into a section for each sport chosen. In each, show specific foods (magazine cut outs) that are a must for the athlete. Be sure to designate the proportions each is allowed.

7. Write a news article for the school paper emphasizing a good diet for all young athletes. Be sure to emphasize why diet is so important.

8. Write an old time radio show starring two athletes at opposite ends of the nutritional scale: one who eats a well balanced diet, the other who lives on junk foods. Don't forget to include a commercial or two for the show's sponsor. (A nutritional vitamin packed breakfast cereal). Present the show live or tape it for the class.

9. Invite a local sports celebrity to give his views on what nutrition means to the athlete and to him (her) personally.

S-T-R-E-T-C-H Your imagination: Tell the story of the Bionic Athlete who has astounded the world with his (her) athletic performances. Be sure to include his special diet and quantities. Draw or find a picture of your Bionic Athlete.

SOURCES:

"Weight Control of High School Wrestlers", Developed by Limon School District RE-4J, through NET program funds.

"Meeting Special Food Needs" Developed by Woodlin School District R-104. Through NET Program Funds.

General Diet and Food Preparation

Strong, healthy people possessing limitless energy are built by abundant, well balanced diets. To be fed means more than filling the stomach with foods that appease the hunger. It means having each day the kind of food that will promote abounding health, energy, vitality, and resistance to illness.

In Diet and Training Tips for Athletes, a special emphasis is placed on the preparation of the food for the athlete. His food should be broiled, baked and boiled. When boiling, use as little water as possible and cook in the quickest time possible to preserve as many nutrients as possible.

Special emphasis also is placed on the meal the night before competition and the day of competition.

The following foods should be avoided the day before and the day of competition, as well as throughout the season:

1. Greasy or fried foods: pork, pie, biscuits, donuts, potato chips, buttered popcorn, and salad oil dressing.

2. Gas forming foods: dried beans, onions, cabbage, cauliflower, kraut.

3. Spicy or peppery foods: chili, hot dogs, catsup, mustard, pickles, tamales.

4. Tobacco and alcohol.

5. Candy, gum, life savers, mints, all soft drinks (coke, pepsi, etc. are definitely gas forming), real cold or frozen foods.

Psychological Aspects of Foods

Nutrition is a psychosomatic process so we must accentuate the positive and eliminate the negative. Plenty of rest, a good philosophy of living which will bring you freedom from worry, are essentials to rebuilding a healthy body and the correct assimilation of food.

Individuals differ somewhat in their absorption, use and response to food. The athlete should eat nothing he feels might bother him. There is a psychological as well as a physiological response to food. Serve foods which are familiar and well liked by the athlete.

The athlete whose training includes special emphasis on diet is sure to develop the sureness which comes from knowing he has considered every detail of training. Diet can be one of the most important factors in an athlete's performance.

Reasons for let-down the second half of play or second race include:

1. Poor breakfast.
2. Too little, too heavy, or improper food before competition.
3. Failure to adhere to good nutrition practices throughout the entire season (a daily intake of less than 2,000 calories per day).
4. CAUTION! Don't take sugar before competing. This gives you, after a short time, a high blood sugar rise and the body becomes alarmed. Immediately there is an increased flow of insulin which actually lowers your blood sugar level to below normal. This may result in a sudden feeling of tiredness or fatigue. You can undo a whole week of training in five minutes.

Avoid Carbondated Drinks of all kinds. They are gas forming and the sugar content is bad for you as well as being bad for your teeth!

Avoid Chocolate and Empty Calorie Foods.

Avoid Laxatives and Mineral Oils. They impair the absorption of a number of nutrients, namely: carotene or Vitamins A, D, E, and K.

Weight Control

A weight chart of the type which shows the weight before and after workouts should be kept for each member of the team. The information derived from this chart may be helpful in many respects. It may be of value in determining the individual's weight reducing possibilities, how hard he has been working, whether he is growing and what his weight classification should be.

It is possible for a boy in good physical condition to lose five pounds, and even as much as ten pounds, through proper dieting without any deterious effects. A normal boy who weighs 150 pounds when in good physical condition can usually take off five pounds rather simply and easily by vigorous exercise and a calorie controlled diet. It is desirable to have the advice and active assistance of a competent medical authority before permitting any great reduction in weight to be made.

Diet, Sleep and Training

It is impossible to attain that superb degree of physical condition which is so important in wrestling without a serious and conscientious regard for these three factors. All should be regular. Food should be eaten on a regular schedule; at least eight hours of sleep should be had, and at the same hours each night; and hard, strenuous, vigourous workouts should be participated in almost everyday. A well-balanced diet is satisfactory to train on. Eating when tired and eating too much should be avoided. A balanced meal three times each day with plenty of fresh vegetables and fruit is important. By having a proper diet, all cells of the body are properly fed and replenished, and there is less likelihood of faulty elimination. It is important to have at least one evacuation each day and this should be controlled by diet instead of resorting to laxatives.

Answer the following True-False questions about athletes and their diets.

1. Water is a vital need of any athlete because he loses so much in perspiration.
2. A pregame meal should be eaten two hours before the event.
3. The High Performance Diet (or Carbohydrate Loading) is not recommended for teenage athletes.
4. If an athlete eats a lot of protein this will build muscle.
5. Massive doses of vitamins before a performance will aid any athlete even if they have an adequate diet.
6. Teenage athletes need the same amount of food as other average teenagers.
7. It is best to eat at least three hours before competing in any athletic event.
8. An athlete needs large amounts of liquids to prevent heat exhaustion and heat stroke.

Answers: 1. True 2. False 3. True 4. False 5. False 6. False
7. True 8. True

SPECIFIC DIETS FOR SPECIFIC SPORTS

1. All out effort of short duration diet:

   - such as for track and swimming
   - low fat foods
   - raw fruits and vegetables, dried fruits, nuts, whole grain cereals, berry and fruit pies, milk and cheese.
   - day of event
   - fruit juices, water, and carbohydrates.

2. *High performance diet for Intermediate length events (or Carbohydrate Loading):

   - 6 day program
   - Phase I (3 days)
     - eat proteins and fats, low in carbohydrates these 3 days, exercise strongly the muscles used during competition.
   - Phase II (3 days)
     - high carbohydrate diet with adequate amounts of fat and protein. Continue up to day of event. Exercise closer toward competition day.

   *not recommended for teenage athletes.

3. Wrestling Diet:

   - weight loss should not be more than 3 to 4 pounds per week.
   - if in training, they should not eat below 2000 calories per day.
   - eat as much as they want the first of the week but low in carbohydrates.
     Second part of the week eat lots of carbohydrates but low in salty and bulky foods.

4. Basketball player diet:

   - usually needs to gain weight, should do before season starts, accompanied by weight training.
   - pre-game meal - high energy food 3 hours before game. High carbohydrates or liquid meal before game.

5. Swimmers diet:

   - same as wrestlers
   - light carbohydrates before meets.

6. Tennis diet:

   - eat regular meals
   - day of meet eat as normal as possible supplementing with diluted fruit juices or drinks.

7. Gymnastics and skating diet:
   - diet problems for women more than men.
   - get plenty of iron
   - overweight problems because they don't burn enough calories.

8. Football diet:
   - this athlete may increase food intake to gain weight. This could cause problems with obesity in later years because the activity level decreases but high calorie food intake remains the same.
   - regulate food and liquids on game day.

9. Track and field diet:
   - same as wrestlers diet
   - weight control for shot putters and discus throwers since they don't expend as much energy.

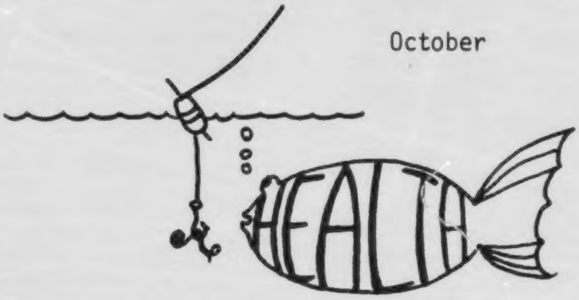
10. Cross country skiing diet:
    - day of performance have adequate supplies of water and carbohydrates.

11. All sports need constant replenishment of fluids throughout training and competition periods.

BE HOOKED ON HEALTH
or
"SAY BYE-BYE TO BOOZE AND BUTTS"

Art
Business
English
Health
Social Studies

October



Objective: The student will recognize the effect of alcohol and smoking on his health.

To The Teacher:

Alcohol abuse has recently become an increasing problem in our teenage population. Students need to realize the effect that alcohol and drugs have on their bodies. Alcoholic beverages, smoking, drugs - even aspirins - are antagonistic toward vitamin stores in our bodies. They also affect the way the body uses food. They act in various ways to impair proper nutrition: by hastening the excretion of certain nutrients, by hindering the absorption of nutrients or by interfering with the body's ability to convert nutrients into usable forms.

Activities:

1. Read and discuss with class "Alcohol: How Does It Stack Up?" (HELP #1) and "How Alcohol Works" (HELP #2).
2. Complete the quiz "What's Your Alcohol Quotient"? (HELP #3). Discuss correct answers.
3. Read and discuss with class "Please Read Me. - - Don't Throw Me Away." (HELP #4).
4. Complete the opinion survey "Let's Call It Quits" (HELP #5) Discuss answers.
5. Collect advertisements from newspapers and magazines for tobacco and alcoholic drinks. How do they appeal to the consumer? What mood do they convey? How are the ads alike? Different? Are they misleading? Design an ad or a poster encouraging people to stop smoking or drinking.

6. Have each student write down one reason a young person might start to drink regularly, and one reason an adult might turn to alcohol. Collect the papers, mix them up, and draw one out and read it. Have students suggest alternatives to the use of alcohol, i.e. something that might improve the situation and thus reduce the need to turn to a chemical for escape.

SOURCES:

Nutritional Curriculum developed by Garfield School District No. RE-2 through NET Program Funds.

HELP #1

ALCOHOL:
HOW DOES IT STACK UP?

We live in a drinking society. Sure, we drink milk, tea, lemonade, soda pop. But we also take drinks with alcohol. You see signs of it everywhere - on television, on radio, in newspapers and magazines, and 50 feet high on billboards.

Americans have been drinking since Colonial days. The hard-drinking frontier people of the 18th and 19th centuries are part of our history. Of course, there have been many, too, who believe in temperance and abstinence - not drinking. We tried banning alcohol altogether in the 1920's during the Prohibition era. That only lasted for 13 years.

We still have rules about drinking though. Some parts of the country won't even allow alcohol to be sold. Laws in all states limit its sale to adults or older teens.

That doesn't mean young people don't drink. Because more adults drink than do not drink, it is seen by some as a sign of being grown up. Adolescence is a time when one is no longer a child, and is learning to be an adult. A young person who wants to be seen as an adult may use alcohol for this reason.

Most Americans have their first taste of alcohol during childhood or adolescence. This first taste usually takes place at home. By the time they are in high school, many teens drink once in a while, some more often, even though it is not legal.

Although we are a drinking society, there are some very mixed feelings about drinking. Sometimes it is thought to be good, sometimes bad. Some people can handle drinks, others run into great problems.

These mixed messages can be very confusing for someone who is trying to decide whether or not to drink, or is learning how to handle alcohol.

Often the facts about alcohol get lost in all the confusion, when what is really needed is a hard, clear look at the facts. Knowing about alcohol and what it does can help you make up your mind whether you will drink one day, and if so, how.

About Alcohol

There are many kinds of alcohol. The only kind you can drink is called ethyl alcohol, or ethanol. Drinking other kinds of alcohol, such as rubbing alcohol, is like drinking poison.

Ethyl alcohol is found in beer, wine, and distilled spirits (hard liquor). Beer is made from malted barley, and the amount of alcohol varies from three to six percent. Wine, made from fruit (especially grapes) is about 12 to 21 percent alcohol. Distilled spirits made from grains - whiskey, gin, rum, etc. - are made by a different process and contain more alcohol. These may have from 40% alcohol (called 80 proof) to 50% alcohol (called 100 proof).

A 12-ounce can of beer, an ounce of 100 proof liquor, and a 12-ounce glass of wine each have about half an ounce of alcohol. A carbohydrate, alcohol is high in calories, higher than sugars and starches. These are mostly "empty" (not adding to body nourishment) calories.

Alcohol is absorbed (gets into the blood stream) very quickly. It passes through the lining of the mouth, tongue, throat, stomach, and intestines. The body gets rid of most of it by "burning" it up, through a process called oxidation, in the liver. The rest comes out in the breath, sweat, and urine.

The liver can only use up about one-quarter of an ounce of alcohol an hour in a 160-pound man. If you drink faster than this, alcohol builds up in the blood and begins to affect the brain. Alcohol is a drug, similar to other drugs such as barbiturates and narcotics which depress (slow down) the body.

Different amounts of alcohol have different effects. A measurement called the blood alcohol concentration (BAC) shows the amount of alcohol per 100 units of blood. A BAC of .10 percent means that alcohol makes up one-tenth of one percent of the total amount of blood in the body.

"Booze" and the Brain

The effect that a build-up of alcohol will have on the brain depends, of course, on how much and how fast you drink. It also depends on certain things that affect absorption. Beer and wine have some nutrients that must be broken down, so it takes longer for them to be absorbed. Having food in the stomach will slow absorption. A person who weighs more has more blood, so it takes more alcohol to raise the BAC. Straight alcohol is absorbed the fastest, followed by alcohol mixed with something fizzy like soda pop. Alcohol mixed with water is absorbed more slowly.

Different BAC's affect different parts of the brain. A low BAC, .01 to .05 percent, affects the frontal lobe, which controls reason and self-control. Drinkers at this level may feel carefree, less tense, and sure of themselves. Rules are lifted, there is less control, and a person may talk a lot. Thinking is less clear. Most moderate drinkers stay in this range, which they find pleasant, though some may become depressed.

From .05 to .10, people begin to feel "high," and are heading toward the legal definition of drunkenness.

A BAC of .10 to .30 percent affects the parietal lobe, which controls the senses. Drinkers in this range have trouble writing, talking, and moving. The law says that a person with BAC .10 prcent is too drunk to drive.

A BAC of .20 to .30 percent affects the occipital lobe, which controls sight. Drinkers may see double, have trouble telling distance, and color, and not be able to see things as they really are.

BAC .15 to .35 percent affects the cerebellum. This controls coordination, so at this level drinkers are often clumsy.

BAC .25 to .50 percent affects the vital parts of the brain that control breathing and blood circulation. Drinkers with this level may fall into a coma and shock as their breathing and circulation begin to fail, and their body temperature gets lower. They may die. About 1,000 people a year die this way. One way to quickly reach such a dangerous level is to "chug-a-lug" alcohol to see who can toss down the most drinks in the shortest time.

Many people think alcohol is a stimulant, a drug which peps you up, because the first few drinks make them feel good. With each drink, however, alcohol really numbs and depresses the body and emotions. (In the past, doctors even used alcohol to put people "out" for painful operations. It was a possibly dangerous method, but it was the only means available, way back then.)

Sometimes the Body Suffers

People who drink too much alcohol may try to get sober - lose the effects of the alcohol - by drinking coffee, running around the block, taking a shower, or in other ways. All that can do is wake them up, get them in shape, or make them clean. They are still drunk. The only way to get rid of the alcohol's effect is to get rid of the alcohol, which is done by the liver. This can't be speeded up, so the best thing to do is just sleep it off.

Being drunk is often followed by having a hangover, which is really the aftereffect of too much alcohol. Someone with a hangover feels tired, nervous, has a headache, and nausea. This goes away in time.

Heavy drinking over a long time can lead to illnesses much worse than a hangover. People who drink in this way shorten their lives by as much as 10 to 12 years.

Alcohol effects:

Nutrition. Heavy drinkers often don't get the nutrients they need because they drink most of their calories rather than eating well-balanced meals. Also, their bodies do not digest food well.

Liver. This is the organ most harmed by alcohol. Over the years, as the liver keeps working to get rid of the alcohol, it first becomes full of fat. It also may lead to cirrhosis - scarring of the liver. Blood has a hard time moving through the hard, scarred liver. The drinker may die of liver failure, high blood pressure, or heavy bleeding. Cirrhosis of the liver usually takes 10 to 15 years of heavy drinking to develop.

Heart. The heart becomes large and flabby, with high blood pressure. As vessels get narrow and blocked with fat, the heart may fail.

Brain. Disorders of the brain can cause mind and body ills such as loss of memory, stiff arms and legs, uncontrolled sucking movements, confusion, and even death.

Digestive System. Alcohol irritates the mouth, stomach, and throat. Doctors think this may lead to later cancers, although heavy smoking by these drinkers may also be to blame. It often causes stomach ulcers (sores in the stomach lining), and may lead to deadly bleeding.

Muscles. Drinking may cause weakness, pain, swelling, and cramps in the muscles.

Other Drugs. Alcohol can make some medicines work not at all, and others work too well. Taking sedatives and tranquilizers - drugs that slow down the nervous system - and drugs for colds, pain, and allergies at the same time as alcohol can be deadly. It is really dangerous to mix them when you drive or work around machines.

Birth. Recent studies have found that women who drink more than three ounces of alcohol every day may give birth to babies with defects. Babies with this fetal alcohol syndrome have small bodies and heads, and their eyelids are close together. Many have heart defects and low mentality. Doctors do not yet know if smaller amounts of alcohol may also be harmful.

Use or Abuse?

Alcohol by itself is not a bad thing. What counts is the way people use it. Some don't drink alcohol at all. They may not like the taste, or think it is wrong, or feel they have a good time without it, or they think it will harm their health.

Many others do drink, for different reasons (see end of article). Most of the people who drink enjoy it, and by doing so, do not harm themselves or others.

A small number of drinkers use alcohol in such a way that it becomes a big problem in their lives. They have never learned a harmless way to drink, and they don't see or don't pay attention to the warnings along the way (see end of article).

Problem drinking can take many forms. These drinkers may drink a lot, and get drunk often. They may go on "binges," staying drunk for days at a time. They may drink to get rid of hangovers, have a hard time stopping their drinking, drink instead of eating, or have blackouts where they don't remember what they did. Drinking may come between them and their families, friends, and neighbors. They may lose jobs, have accidents, get traffic tickets, fight, and get sick.

The problem drinker is not always an alcoholic, but may be on the way there. Alcoholism is not a crime or a sin. It is thought of by most as an illness, one which can end in death. Alcoholics cannot control their drinking, and it interferes with many areas of their lives, including their health.

Many people, when they think of alcoholics, think of "skid-row bums" lying in the street. In truth, only three to five percent of alcoholics ever fit this description. Alcoholism affects all kinds of people - doctors, teachers, housewives, business people, workers, students.

Some alcoholics develop a great tolerance for alcohol. They can drink very large amounts without seeming to be drunk. They have to drink more and more just to get the effects they used to get with less alcohol. Their bodies crave alcohol every day, which is called dependence. If they suddenly stop drinking, they may suffer a withdrawl syndrome which lasts for about 12 to 48 hours. They sweat, feel tense and sick to the stomach, and are confused. They may also have convulsions and terrifying visions called the D.T.'s - delirium tremens.

No one knows for sure why someone becomes an alcoholic. It is thought to be an illness, but we can't point to one thing and say "this is the cause." It is probably due to a combination of things.

Because alcoholism seems to run in families, some people think you can inherit something that makes you more likely to have problems with alcohol. There are many studies on this, but no answer yet. Alcoholism might also run in families because the members are affected by the same environment.

Another cause of alcoholism might be an emotional problem that the alcoholic tries to treat or escape with alcohol.

It could be tied to a culture that does not teach a responsible way of drinking. For example, the U.S., Sweden, and northern Russia have high rates of alcoholism, while Italy, China, and Spain have low rates.

Persons who have a tolerance for alcohol can easily get into trouble with similar drugs such as narcotics. Their bodies, already used to alcohol, can very quickly get used to these drugs. Then they have yet another problem.

Help One, Help Many

Just as there is no one cause of alcoholism, there is also no single treatment. Sometimes it is necessary to first detoxify the voinker (get all the alcohol out of the system) and take care of any health problems. This is most often done in a hospital.

Group or private counseling can help alcoholics understand why they drink, and learn how to deal with their problems in better ways. It is important to try to reach people when they are headed for alcoholism and other drinking problems. The earlier they get help, the better.

In Alcoholics Anonymous groups, members give each other support so they can quit drinking, stay sober, and turn their lives around.

For every alcoholic, there is usually a family that suffers. It is very sad and frightening when someone you love - a mother, father, sister, brother, child, or friend - has such a problem. Families can turn to a group called Al-Anon for information and support. There is another group called Alateen just for teenagers.

Young People and Alcohol

Not too long ago, we were going through a drug age. Many young people were using marijuana and other drugs. Now alcohol - especially beer - seems to be the drug of choice, and many parents are just thankful that their children are not using "drugs." As you have seen, though, alcohol is a drug and can be very dangerous in its own right.

One out of four teens drinks once in a while. If your parents drink, you are two and a half times more likely to drink. Boys tend to drink more than girls, but girls are catching up fast. There are not many teenage alcoholics because it generally takes several years of heavy drinking for a person to get addicted to alcohol. There are a lot of young people who are having problems with alcohol, though. Many will work through it. Some are learning to be alcoholics.

The great danger in using alcohol during adolescence is that you may be missing out on much of the important learning that goes on during this time. It is a growing-up time, when you learn who you are, what you like and don't like, and what you want from life. These things are learned through experience. Young people who misuse alcohol do not learn from their experiences, and their growing up suffers.

Some people think of alcohol as a magic and mysterious thing. It doesn't really have any special power, though. What you do with it, what it does to you - that's your choice.

WHY PEOPLE DRINK

- To celebrate holidays and other events.
- Because everyone else does, and they don't want to be left out or feel different.
- To feel relaxed and happy.
- To escape from family, money, work, and other problems.
- Because they're thirsty, or enjoy the taste.
- To feel smart and grown-up.

ACCIDENTS WITH ALCOHOL

Sometimes your very life depends on how wisely you use alcohol. To some, wine may go with dinner, and beer with pretzels, but alcohol and driving are always a bad mix. Driving is a job that needs full attention. Even a little drink (as low as BAC .05 percent) can affect one's ability to drive. Alcohol is involved in one-half of all traffic deaths.

Drunk driving is the number-one killer of teens and young adults. It is a more common cause of death than war, drugs, or disease. Almost 8,000 young people die each year from this cause. Another 40,000 are disfigured for life.

Alcohol also seems to be present at other kinds of violence. It is involved in one-half of all murders, 50 to 60 percent of drug overdoses, maybe one-half of all drownings, 40 to 60 percent of broken bones, and one-third of the reported suicides. It can cause accidents both at work and at play.

DRINKING DANGER SIGNS

There are signs that can warn a drinker that he or she is heading for trouble with alcohol. Some of them are:

*Drinking more and more, especially when alone.
*"Sneaking" drinks.
*Gulping down drink after drink.
*Making up "reasons" to drink.
*Needing a drink in the morning.

NUMBERS TO KNOW

There are 95 million drinkers in this country. Nine million of them are problem drinkers or alcoholics.

Recent figures show the average U.S. drinker used nearly four gallons of pure alcohol. This would work out to 44 fifths of whiskey or 157 bottles of table wine, or 928 bottles of beer. This equals three ounces of whiskey each day, or the equivalent of one cocktail, one glass of wine, and one bottle of beer each day. However, there is no "average" drinker. On the whole, men drink three times as much as women, and alcoholics drink 11 times as much as moderate drinkers.

Nearly one person in five has a loved one who drinks too much.

Young people in their 20's make up the group that has the most alcohol-related problems.

Alcohol abuse costs the country $43 billion each year. This includes time lost at work, medical costs, health and welfare services, and property damage.

HOW ALCOHOL WORKS

It is not how young you are when you start to drink or how often you drink that determines if you will have trouble with alcohol, but how much you drink at one time.

You do or do not get drunk according to the rate at which alcohol is metabolized (burned up) by your body. When you drink faster than the alcohol is metabolized, the drug builds up in your bloodstream and affects the brain. The lower your body weight, the emptier your stomach, the more quickly alcohol affects your mood and behavior.

Alcohol is usually metabolized at a fairly steady rate of one drink (3/4 ounce of alcohol) an hour. Consuming alcohol at this rate results in little, if any alcohol accumulation although it may have a mild stimulant quality resulting more from anticipation than the physiological effect. By consuming two drinks an hour you are drinking faster than the alcohol can be metabolized. When the blood alcohol concentration reaches 0.05 percent the brain functions which control thought, judgment, and restraint are inhibited. As greater amounts are consumed, the alcohol depresses more brain functions.

At a blood concentration of 0.10 percent alcohol, voluntary actions become clumsy, and a person is considered drunk. At 0.30 percent, confusion and stupor set in and a person is "smashed", at 0.50 percent, coma develops. If you drink more than that, you stand a good chance of drinking yourself to death.

WHAT'S YOUR ALCOHOL QUOTIENT?

1. Alcohol is classed as a:
   a. Stimulant
   b. Depressant
   c. Narcotic
   d. Non-drug

2. Alcoholism is:
   a. An illness
   b. Hereditary
   c. A moral problem
   d. Temporary

3. How long will it take you to burn up two 1-shot drinks?
   a. 1/2 hour
   b. 1 hour
   c. 2 hours
   d. 3 hours

4. The best way to sober up a drunk is:
   a. Give him coffee
   b. Have him walk around
   c. Throw him in a cold shower
   d. Let him sleep it off

5. Alcohol is primarily composed of:
   a. Carbohydrate
   b. Fat
   c. Protein
   d. Vitamins

6. The main reason people give for drinking is:
   a. Flavor
   b. Social
   c. Thirst
   d. Religious custom

7. Alcohol is to anesthetic as:
   a. Amphetamine is to depressant
   b. Narcotic is to stimulant
   c. Amphetamine is to stimulant
   d. Depressant is to stimulant

8. Alcohol reaches the brain in about:
   a. 1 hour
   b. 5 minutes
   c. 3 hours
   d. Doesn't reach the brain

9. A drink of whiskey will:
   a. Speed reaction time
   b. Keep you warm in cold weather
   c. Lesson your inhibitions
   d. Stimulate your thinking

10. Alcohol is the _____ abused drug in the United States
    a. #1
    b. #2
    c. #3
    d. #4

11. Heavy drinkers have greater incidence of _________ than non-drinkers.
    a. Deformed children
    b. Liver cirrhosis
    c. Auto accidents
    d. All the above

12. How many estimated alcoholics under the age of 20 are there in the U.S.?
    a. 1,000
    b. 150,000
    c. 450,000
    d. 1 million

13. What determines how drunk a person will get?
    a. Amount they drink
    b. How fast they drink
    c. Body weight
    d. All of the above

14. Which of the following reasons for drinking is most likely to set the stage for alcoholism?
    a. Drinks to be social
    b. Drinks to change mood
    c. Drinks to accompany meals
    d. Drinks to quench thirst

15. An alcoholic's withdrawal is:
    a. Less severe than narcotic withdrawal
    b. More severe than narcotic withdrawal
    c. About the same as narcotic withdrawal
    d. Completely safe and comfortable

What's Your Alcohol Quotient?

ANSWERS

1. b
2. a
3. d
4. d
5. a
6. b
7. a
8. b
9. c
10. a
11. d
12. d
13. c
14. a
15. a

SMOKE

PLEASE READ ME!......DON'T THROW ME AWAY!

There is a rapidly growing concern about the increasing hazard of air pollution. Many people know we must take drastic measures to minimize this problem. But, very few people consider smoking a damaging source of air pollution.

Second-hand smoke means smoke fumes created by lighting cigarettes, cigars, or pipes and exhaling their smoke. Second-hand smoke presents a health hazard to the people confined in a particular area.

People need large amounts of oxygen to exist and function. During the course of an hour, a person inhales 12,000 quarts of air. Normal consumption is approximately 35 pounds per day. Every cell in our body needs oxygen, and any denial inhibits cell function and may cause the death of that cell.

The respiratory system is very limited in filtering out air pollution; much polluted air goes into the system. Many people don't realize that our lungs are the only internal organs that are constantly exposed to the outside environment.

*Cigarette smoke affects the non-smoker in much the same way as the smoker

*The non-smoker is forced to breathe in smoke from the burning end of the cigarette as well as the smoke exhaled by the smoker.

*Inhaling second-hand smoke makes the heart beat faster and forces up blood pressure and the level of carbon monoxide in the blood.

*Lung illness is twice as common in young children whose parents smoke at home as in those with non-smoking parents.

*68% of the smoke from cigarettes goes into the environment. Second-hand smoke contains twice the tar, nicotine, and volatile irritant gases as smoke inhaled by the smoker.

*Smoke-filled rooms have levels of carbon monoxide equal to and sometimes exceeding the legal maximums for ambient air quality set in several localities and for the U.S. as a whole.

*There is more cadmium in the smoke that drifts off the burning end of the cigarette than in the drag the smoker takes. Large doses of cadmium have been related to hypertension, chronic bronchitis, and emphysema.

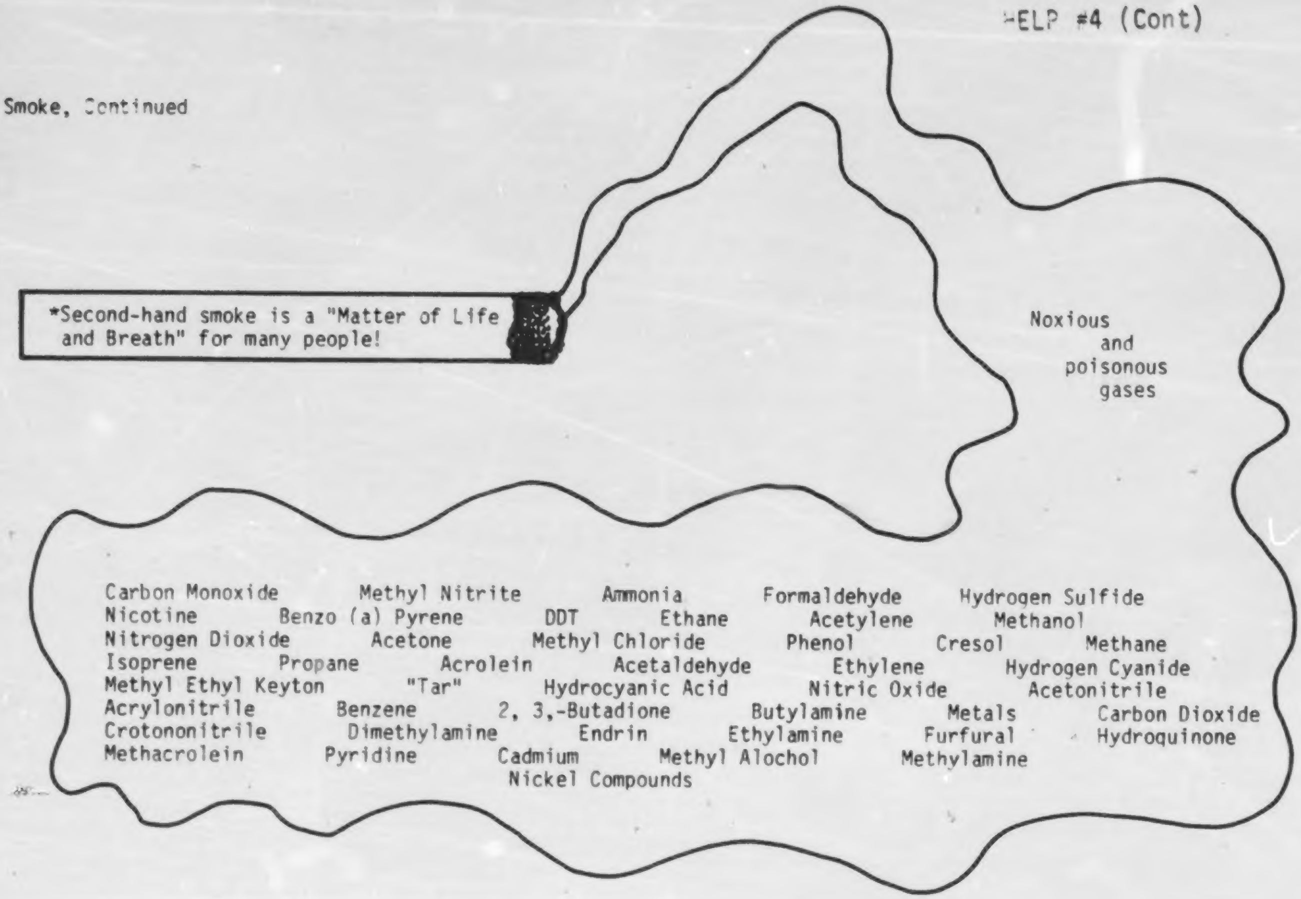
*At least 34 million Americans are sensitive to cigarette smoke, many of whom suffer from asthma, chronic bronchopulmoary disease, and coronary heart disease.

*The amount of carbon monoxide in the blood of non-smokers doubles in a poorly ventilated room filled with cigarette smoke. Even after having moved outside the room, a person retains carbon monoxide in the body for three or four hours.

*Carbon monoxide creates an oxygen shortage in the body by replacing oxygen in the blood.

*The non-smoker has a right to breathe air free from other people's dangerous smoking pollutants.

Smoke, Continued



*Second-hand smoke is a "Matter of Life and Breath" for many people!

Noxious and poisonous gases

Carbon Monoxide Methyl Nitrite Ammonia Formaldehyde Hydrogen Sulfide
Nicotine Benzo (a) Pyrene DDT Ethane Acetylene Methanol
Nitrogen Dioxide Acetone Methyl Chloride Phenol Cresol Methane
Isoprene Propane Acrolein Acetaldehyde Ethylene Hydrogen Cyanide
Methyl Ethyl Keyton "Tar" Hydrocyanic Acid Nitric Oxide Acetonitrile
Acrylonitrile Benzene 2, 3,-Butadione Butylamine Metals Carbon Dioxide
Crotononitrile Dimethylamine Endrin Ethylamine Furfural Hydroquinone
Methacrolein Pyridine Cadmium Methyl Alochol Methylamine
Nickel Compounds

HELP #5

LET'S CALL IT QUITS

Circle One

1. Smoking is a habit. Yes No
2. Smoking is a cause of lung cancer and heart disease. Yes No
3. Smoking affects others who do not smoke. Yes No
4. Smoking is expensive. Yes No
5. Smoking can cause hazards. Yes No
6. Breaking a habit is hard. Yes No
7. Breaking a habit takes will power. Yes No
8. List three reasons why people smoke:
   a. ________________________________
   b. ________________________________
   c. ________________________________
9. List three reasons why people do not smoke:
   a. ________________________________
   b. ________________________________
   c. ________________________________
10. What would you base your decision on regarding why you would or would not smoke? (Write a short paragraph.)

11. How could you help others with a smoking problem?

12. Have you ever tried smoking? Yes No

AN APPLE FOR THE TEACHER
or
"THE FRESHER THE BETTER"

English
Foreign Language
Health
Home Econmics
Math
Social Studies

October

Objectives: To encourage students to eat more vegetables and fruits (especially fresh ones) and to understand their value to the body.

To The Teacher:

Fresh fruits and vegetables make a valuable nutritional contribution to our diet. They are best, naturally, when they are just picked, for as time goes on after harvest, they do lose some of their nutritional value due to chemical changes. Processed, dried, canned, chilled, or frozen, fruits and vegetables, which we buy more of today, are sometimes lower in nutritional value but still are a much needed source of vitamins, minerals and fiber. We eat much less fresh fruit than did our grandparents, but we are eating more fresh vegetables. For instance, we eat more lettuce, which cannot be processed, as well as fresh carrots and fresh corn. Overall, due to improvements in commercial canning and freezing, our consumption of total fruits and vegetables has more than tripled over the last 30 to 40 years.

Activities:

1. What's Popular In Your School?

   a. Take a survey of which fruits and vegetables (fresh and processed) the students like most and then check with the school food service. See which ones they serve most often. Discuss what you found out with the class and compare what is liked by students with what is being served. What is the outcome?

b. Survey the class as to what fruits and vegetables they have not tasted. (HELP #1) Fruits and Vegetables will serve as a basic list. Have volunteers bring some of each unfamiliar fruit or vegetable so that all can have a sample.

2. Make up a month of school meals that are well balanced with a variety of fresh fruits and vegetables and also well liked by the majority of students. (You can determine this by a vote of your classmates and friends or by checking with the food service to see which meals or dishes are favored by the general student body). Discuss your menu with the class for their comments, then when perfected, submit to the food service staff. Be sure to refer to Appendix II in the back of the book "Nutritional Values in Common Portions of Food".

3. Where did these foods originate? Using reference books, trace the geographic origin of at least two fruits and two vegetables. Add additional information regarding each that you may find. Tell how the food was originally served and/or regarded by its founding people. For example, information can be found on the following: corn, potatoes, tomatoes, cabbage, onions, apples, carrots, watermelon, bananas, and oranges. Can you find others not mentioned? Share your findings.

4. Plan to eat at an ethnic restaurant - decide what vegetables or fruits are important to the particular culture. Ask for information on the background of the ethnic dishes from your waiter, waitress or the management. Report your findings to the class.

5. Invite a guest speaker either someone from a foreign country, or an experienced foreign traveler, to give the class some insight on foods, particularly fruits and vegetables, eaten in various foreign countries.

6. S-T-R-E-T-C-H Your Imagination - You are a famous horticulturist and finally, by mixing and matching many fruits and vegetables, you produce from your experimental garden a wonder food. Name it and explain what nutrients it contains. Draw a picture of this revolutionary new food.

7. Shopping - Choosing the Most For Less. Choose a specific fruit or vegetable and compare ingredients of this food in each canned and frozen product. Write down ingredients - compare unit pricing. Discuss your findings in class. (See if this food is sold fresh - compare prices here with the processed food.) See (HELP #2 - Fresh Fruits and Vegetables Cost Less in Season).

8. Secure a new see catalog and discuss new hybrids that are being introduced.

9. On Your Own. You are a single person on your own. Your budget is limited; but being of sound mind and body, you wish to eat correctly and at the same time, watch your money. Plan a menu for a week of three meals per day; two at home and the other you carry to work, use as many fruits and vegetables as you can to accompany your meals. Check prices in the newspaper before you decide which foods to put on your menu. Cut out and staple the special prices you find in the paper to your menu to verify your choices. Discuss menus in class along with the value of shopping for fresh vegetables and fruits while in season. (Be sure you check with HELP #2).

10. Followup. Take one day of your menu plan, make a grocery list and then visit the grocery. Price what you need (do not count staples - flour, sugar, salt, and pepper) to complete your three meals.
    In later class discussion, who comes out the cheapest on the money but the richest in nutrients?

SOURCES:

"Fruits and Vegetables," Colorado State University Extension, Expanded Food & Nutrition Education Program, 1980.

HELP #1

FRUITS AND VEGETABLES

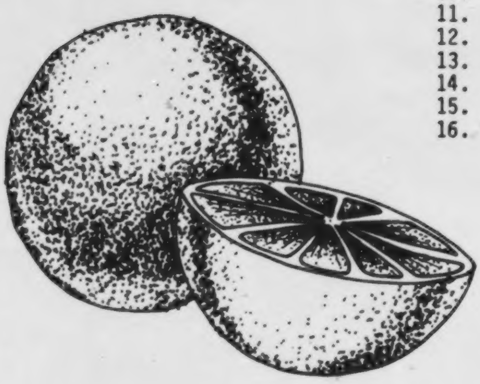
All Fruits and Vegetables have Vitamin C, but in different amounts!!!

Below is a list of common fruits. Those listed first have the highest amount of vitamin C per serving. Fruits also high in vitamin A are indicated in parentheses.

1. Oranges
2. Papayas (high in vitamin A)
3. Grapefruits
4. Strawberries
5. Lemons
6. Cantaloupe (vitamin A)
7. Mandarin Oranges, canned
8. Mangos (vitamin A)
9. Watermelon and Honeydew Melons
10. Tangerine and Tangelos
11. Avocados
12. Dried Apricots (vitamin A)
13. Bananas
14. Necatrines (vitamin A)
15. Apples
16. Pineapples
17. Rhubarb
18. Berries
19. Cherries
20. Grapes
21. Peaches (vitamin A)
22. Pears
23. Plums
24. Pomegranates

Below is a list of common vegetables. Those listed first have the highest amount of vitamin C per serving. Vegetables high in vitamin A are indicated in parentheses.

1. Hot chili peppers
2. Sweet green peppers
3. Broccoli (vitamin A)
4. Brussel sprouts
5. Mustard greens (vitamin A)
6. Lambsquarters (Quelites) (vit. A)
7. Cauliflower
8. Kohlrabi
9. Tomato
10. Rutabagas
11. Sweet Potatoes (vitamin A)
12. Potatoes
13. Cabbage
14. Dandelion greens (vitamin A)
15. Turnips
16. Asparagus
17. Peas
18. Beet greens (vitamin A)
19. Soybean
20. Spinach (vitamin A)
21. Green beans
22. Lettuce
23. Onions
24. Squash (vitamin A)
25. Celery
26. Corn
27. Pumpkins (vitamin A)

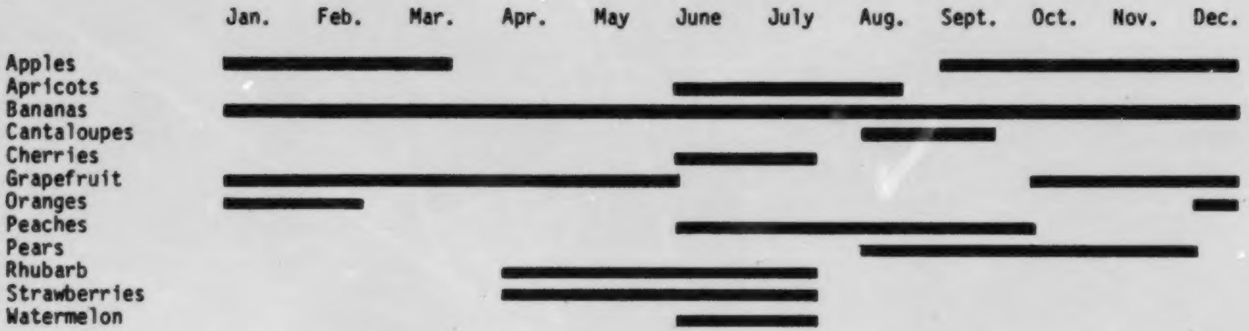


Developed by C.S.U. Extension for use in Colorado Expanded Food and Nutrition Program - 1980

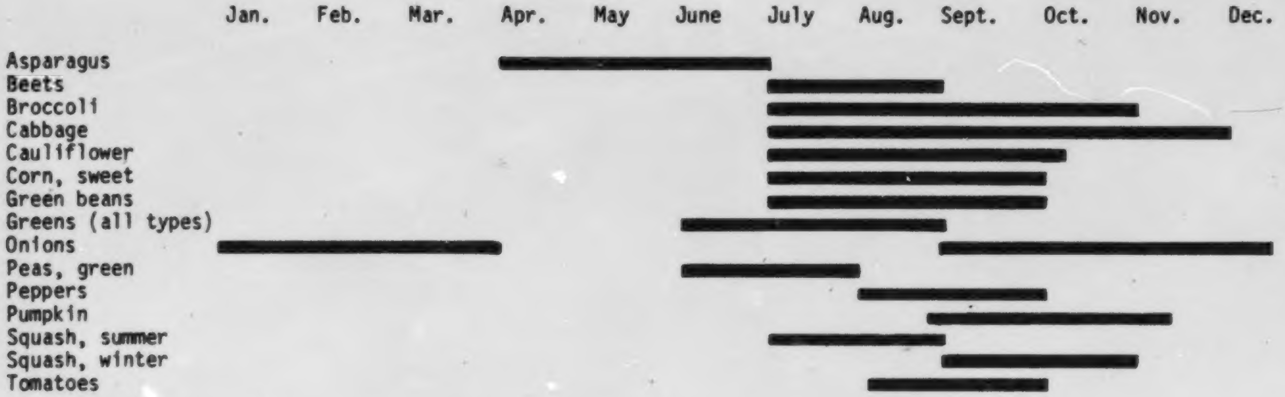
HELP #2

FRESH FRUITS AND VEGETABLES COST LESS IN SEASON

Fruit Seasons



Vegetable Seasons



PROTEINS - ANIMAL AND PLANT

Complete & Incomplete

Debate
English
Health
Home Economics
Science

November

Objective: The student will learn that eating lower on the food chain conserves the world's resources and is just as healthful.

To The Teacher:

Bread and grains have long been the staple of man's diet, and today is no exception. Grain is consumed directly by eating products such as corn meal and rice; and indirectly by eating foods such as red meats, milk, eggs, cheeses, and other animal products. The difference is that choosing to eat indirectly means that a person consumes far more grain. Counting both direct and indirect consumption, a European eats about 1,000 pounds of grain per year while a North American consumes nearly 2,000 pounds, with only 200 pounds consumed directly. Poorer nations consume 400 pounds per capita while we consume 2,000 pounds per capita.* Looking at these statistics may be an eye opener to us as to how our life style determines the way others in the world live.

Please have students read (HELP #1) on proteins and answer the questions that follow before beginning the activities section, as several discussion questions will be based upon that information.

Activities:

1. Discuss the functions of protein in the body. What should we know about the eight essential amino acids? Discuss what is meant by complete and incomplete proteins. Give examples of each.

2. Plan food combinations using plant proteins to form a complete protein. Try to think of those that would be particularly good for a noon day meal, family evening meal and snacks. (see HELP#2)

3. What do you understand the term food chain to mean? Draw a diagram of the food chain as you see it.

4. What cultural, economic or political reasons can you give for the large amounts of meat and animal proteins consumed by Americans?

5. Write a paper on one of the following:
   a. Eating lower on the food chain conserves our natural resources.
   b. The American diet may be in for a change.

6. Keep track of the amount of meat products your family eats for one week. Use the following table from Energy Food and You to convert meat into grain equivalents.
   1 lb. dairy products = 3 lbs. grain
   1 lb. poultry = 3 lbs. grain
   1 lb. pork = 5 lbs. grain
   1 lb. beef = 10 lbs. grain

   Are you surprised at the total?

7. Debate - Americans should eat lower on the food chain in order to have grain to send to developing nations.

SOURCES:

* This material borrowed from the Energy Food & You curriculum guide a program of the Washington State Office of Environmental Education (N.W. Section) and Health Education.

Project Outside/Inside; Booklet 9, Protein Possibilities, Somerville Public Schools, Somerville, MA

HELP#1

PROTEIN

Protein, an essential nutrient for the body, is made up of a large number of compounds called amino acids. Proteins differ from carbohydrates and fats by containing nitrogen as well as carbon, hydrogen and oxygen.

Plants are able to make their own protein directly from the soil, air and water, whereas humans must get their protein supply from animal and plant sources which must first be broken down during digestion to its simplest form, amino acids. These amino acids are then sent from the small intestine into the bloodstream and eventually to all of the cells.

In the nucleus of the cell, the function of these amino acids is determined by the genetic code. They are eventually grouped into combinations and patterns in order to produce specific proteins. These proteins now make up all the enzymes, hormones and antibodies in the body as well as patterns of amino acids which are used to build and repair tissues.

Function of Protein

Protein is essential for growth, repair and maintenance of body tissue. Protein supplies new tissues when the body heals from wounds or recovers from surgery and burns. New tissue mass develops as muscle mass increases during rigorous athletic training. Hemoglobin, essential for carrying oxygen to the cells and carbon dioxide to the lungs, is composed principlely of protein.

The body's ability to resist disease is maintained in part by antibodies which contain protein.

Protein is important in regulating the water balance of the body (the intercellular and intracellular exchange of fluids across the semipermeable membranes.)

Protein is involved in the clotting of blood. When you cut yourself, the injured blood cells react immediately by releasing a protein which together with other special proteins, forms a fiber that plug the cut and stops the bleeding.

Protein helps develop strong bones and teeth, and provides a protective coating for hair, skin and nails.

Individual and heredity traits and characteristics are carried by the genes in our body, which are partially made of protein.

Protein forms a part of the enzymes and hormones which regulate body processes.

Essential" Amino Acids

If all proteins were the same, there would be no controversy about preferable protein sources for humans. But proteins are not identical. The proteins our bodies use are made of varying combinations of 22 amino acids. Eight of these amino acids cannot be synthesized by the body and must be obtained from our food. These are called essential amino acids (EAA). The relative quantities of EAA in egg protein most nearly match the pattern of EAA needed by our body's cells. In order for the cell's "protein assembly center" to most efficiently utilize the protein we eat, all eight EAA must be eaten simultaneously and in the same proportion as the EAA of egg protein. Many foods contain all of the EAA's, but often there is a disproportionately small amount of one of the EAA's, thus limiting the usefulness of that protein source. This problem can be overcome by eating a variety of protein sources in one meal. The EAA deficiency of one food can be offset by the EAA's contained in another food.

THE EIGHT ESSENTIAL AMINO ACIDS

1. methionine (meh-THIGH-O-neen)
2. threonine (THREE-O-neen)
3. tryptophan (TRIP-toe-fane)
4. isoleucine (eye-so-LOO-seen)
5. leucine (LOO-seen)
6. lysine (LYE-seen)
7. valine (VAY-leen)
8. phenylalanine (fee-nul-AL-uh-neen)

Protein Quality

All sources of protein do not have the same quality. That is, they do not contain all the essential amino acids (complete protein) in the correct proportions (high quality protein).

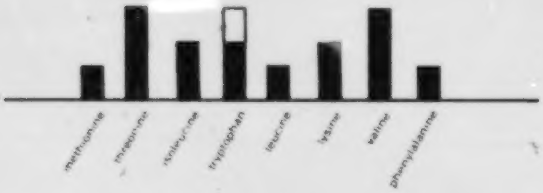
Complete Protein contains all eight essential amino acids. Complete sources of protein are found in animal products - eggs, meat, fish, poultry, milk and milk products. These foods are also considered high quality sources of protein because their amino acid proportions most nearly equal the amino acids needed by the body. The egg, considered to be the most perfect protein, is designated as the "reference" protein, against which other proteins are measured.

Incomplete Protein does not contain all of the eight essential amino acids, or the essential amino acids are not in the necessary proportions. Generally plant proteins are incomplete and therefore low quality protein. Higher quality protein may be obtained from plants through combining or "complementing" them.

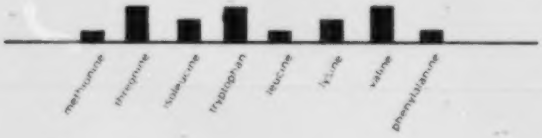
Limiting Amino Acids

The amino acids found in the shortest supply effect the utilization of the rest of the essential amino acids. Tryptophan, lysine and methionine are considered the essential limiting amino acids. If any of these three is in short supply, all the rest of the essential amino acids will be in short supply. Example: "If you eat a protein containing 100 percent of the utilizable pattern's requirement for tryptophan and leucine, but only 50 percent of the necessary lysine, then as far as your body is concerned, you have only eaten 50 percent of all the essential amino acids." Diet For a Small Planet, p. 67.

If your protein source is missing this amount of e.g. trytophan (limiting amino acid).........



Then your protein source becomes this



The protein in the body uses the essential amino acids at the level of the "limiting amino acid" and uses the leftover amino acids for energy.

Combining Protein Sources

Because plant protein is of lower quality, it is important to put together in the right proportions, a combination of plant proteins which will complement (make up for) their amino acid deficiencies and/or be used as a supplement in the diet. You don't have to find out the amino acid pattern of every food in order to compare deficiencies. It is easier to think of groups of foods. Each group has a specific amino acid in greater proportions than in another group of food. By combining two or more groups in the correct proportions, you are able to complement, or remove, the amino acid deficiencies. Example: Grains are low in lysine and high in methionine; whole legumes are the opposite. In a particular proportion, almost any two members of these two families will complement each other adequately.

It is important to remember that the whole diet must be balanced. If we carefully combine our plant proteins, but neglect other sources of nutrients from the rest of the food groups, our diet will not meet all our nutritional needs. Two efficient methods for combining the main groups of protein (grains, legumes, nuts and seeds) are:

1) Complementing Protein - combining plant proteins in the same meal which have mutually complementary amino acid patterns. Such protein mixes do not result in a perfect protein (only eggs are considered perfect) that is fully utilizable by the body, but these combinations can increase the protein quality.

Examples of Complementing Protein

legumes + grains
legumes + nuts and seeds
grains + legumes
grains + nuts and seeds
nuts and seeds + legumes
nuts and seeds + grains

Legumes include - any dried beans (pinto, black, red, white, kidney, soybeans, peanuts, fava, limas)
- any dried peas (chick peas, split peas)
- lentils

grains include - oatmeal, wheat, rye, buckwheat, bulgar, sorghum, millet, barley, cornmeal, rice
seeds include - pumpkin, sunflower, sesame
nuts include - walnuts, pistachios, almonds, cashews, Brazil, filberts, pecans
yeasts include - Brewers, torula, active dry

2) Supplementing Protein - Since animal protein contains all the essential amino acids, combining any animal protein with plant protein will improve the quality of the plant protein. Examples of supplementing protein:

animal products + grains

animal products + nuts and seeds

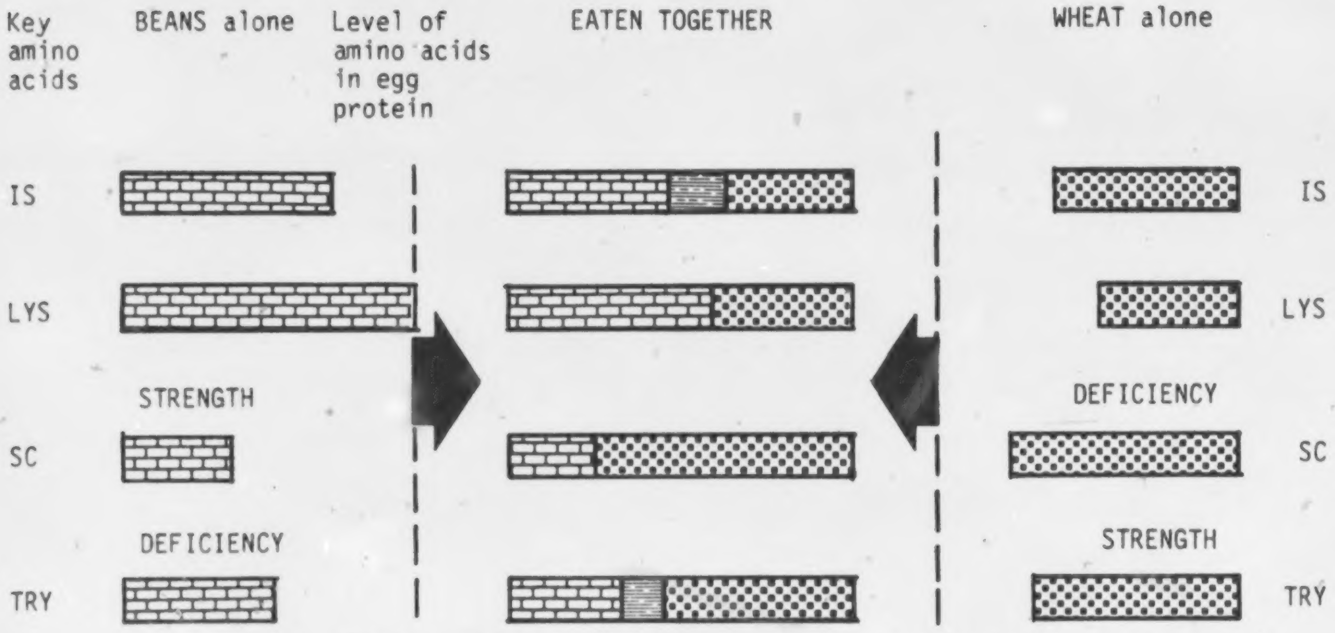
animal products + legumes

Protein Quantity - refers to the amount of food consumed and its protein content. When combining plant proteins, it is important to ensure the required amounts and simultaneous presence of the essential amino acids. Refer to Diet For A Small Planet, and Laurel's Kitchen.

Protein and Athletes

Contrary to what most people think, athletes do not need to significantly increase their intake of protein alone. Naturally, caloric needs increase according to energy expenditure, but this increase requires calories from a variety of foods and not mainly from high protein sources. The primary function of protein is to build and repair body structures, enzymes and hormones. Protein is not normally used as a source of energy. Fats and carbohydrates are the primary energy sources. If an athlete takes in more protein than their body requires, it will be used for energy or converted to fat for storage. Athletes increase their muscle mass with training and conditioning, not just with an increase of protein.

DEMONSTRATING PROTEIN COMPLEMENTARITY



BEANS + WHEAT = COMPLEMENTARY PROTEIN COMBINATION

Source: Amino Acid Content of Foods and Bological Data on Proteins. Food and Agricultural Organization of the U.N., Rome, 1970.

This material borrowed from the Energy, Food, and You curriculum guide, a program of the Washington State Offices of Environmental Education (N.W. Section) and Health Education.

HELP #2

QUESTIONS

1. A food chain is most accurately described as

_____One animal eating another to gain energy for respiration and body maintenance

_____Herbivores losing energy through respiration and photosynthesis.

_____The transfer of decreasing amounts of energy through three or four levels of producers and consumers.

2. The energy value of grain is most efficiently consumed by humans by

_____eating the grain directly

_____feeding the grain to cattle then eating the cattle

3. Which of the following sources of protein are more likely to contain "complete" proteins?

_____animal sources

_____plant sources

4. Which of the foods listed below is an example of a complete protein?

_____cheese

_____peanut butter

_____peas

5. Carbohydrates supply the same amount of energy (Calories) weight for weight as the proteins. True _____ False _____

6. Which part of a plant carries the greatest concentration of protein?

_____root

_____stem

_____seed

_____flower

_____leaf

7. A protein that contains all the essential amino acids is called a "complete" protein. True _____ False _____

8. Of the 22 necessary amino acids, there are eight that our bodies cannot make but must get from outside sources. All of these eight must be present simultaneously. All of these eight must be present in the right proportions. The system which best describes the combining foods so that the combination provides the necessary proteins is called

_____using complementary proteins

_____cooking with meat and dairy products

_____vegetarian cooking

answer key; 1) third statement 2) first statement 3) first statement 4) cheese 5) true 6) seed 7) true 8) first statement

HELP #4

Plant Protein Combinations

1 1/3 cup rice and beans (approximately 1/3 cup beans and 1 cup rice)

1 1/3 cup rice and tofu (approximately 1/2 cup rice and 2/3 cup tofu)

1/2 cup mixed peanuts and sunflower seeds

Animal Protein Sources

2 ounces fish
2 ounces chicken
2 ounces hamburger patty
2 eggs
2 ounces cheese
1/2 cup cottage cheese
2 cups milk
1 1/2 cups yogurt
1 cup baked custard
1 cup clam chowder
5 slices bologna
2 hot dogs
1 1/2 ounces tuna (1/4 cup)
6 ounces sausage
  (3 sausage patties
  or 6 sausage links)

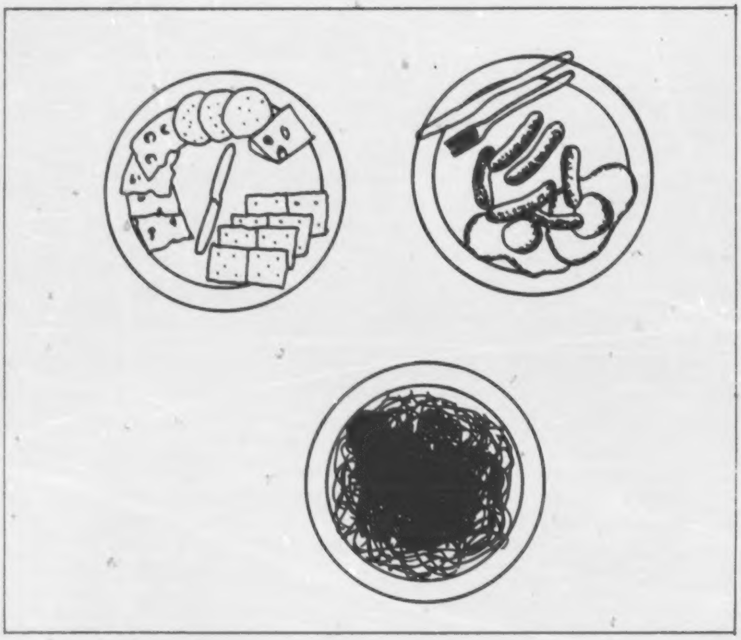
Plant Sources

3 1/2 tablespoons
  peanut butter
1/2 cup peanuts
1 cup baked beans

Animal and Plant Protein Combinations

1 cup macaroni and cheese
1/4 cup chili (beans and beef)
1/6 cheese pie (quiche)
1 1/3 cup rice pudding
1/4 cup spaghetti with one meatball

Project Outside/Inside; Booklet 9,
Protein Possibilities, Somerville Public
  Schools
Somerville, MA



MILK - NOT JUST FOR BABIES!
or
"HAVE YOU HEARD THE LATEST?"

Business (Consumerism)
Home Economics
Science

November

EXTRA!
EXTRA
EXTRA!
SCOOP!
FLASH!

Objective: Students will learn the vital life - time role of milk in good nutrition.

To The Teacher:

No one food supplies all the nutrients the body needs for full growth and health, but milk is the most nearly perfect food. It is a baby's first food and our need continues throughout life. Milk can help your health and appearance, including your figure. With all the holidays coming up - don't forget to take care of you!

There are several kinds of milk and milk products:

1. Fluid milk
    a. Whole milk
    b. Skim milk
    c. Buttermilk
    d. Yogurt
    e. Chocolate milk
2. Evaporated milk
3. Dried or powdered milk
4. Sweetened condensed milk
5. Ice Cream
6. Cheese
7. Butter

Milk supplies several vital nutrients needed for health. Among these are calcium for bones and teeth, not only for growth but also for maintenance. One quart of milk contains 1.5 grams of calcium. Nutritionists recommend that a teenage girl include 1.3 grams of calcium in her daily diet. A teenage boy needs 1.4 grams daily. Adults need only 0.8 grams daily. It is easy to drink a quart of milk a day and still consume the other foods needed for good health. The chart below shows how difficult it is to get needed calcium from other foods.

Amount of food required to give 1 gram of calcium:

a. 3 1/2 c. milk
b. 59 slices enriched white bread
c. 59 cups cooked white rice
d. 14 cups cooked brown rice
e. 111 average sized potatoes
f. 99 pounds beef
g. 21 cups cooked carrots
h. 16 cups cooked green beans
i. 15 medium sized oranges
j. 125 apples
k. 125 bananas
l. 7 oz. cheddar cheese
m. 37 oz. cottage cheese

Students could use the table in the back of the book to calculate the quantity of other foods they would have to consume to get enough calcium daily.

One quart of milk also provides the daily riboflavin (Vitamin B2) requirement, 1/3 of the Vitamin A and 1/4 of the thiamin requirement. It is also valuable for protein during growth and after you are grown as well, because milk protein is completely used by the body and costs less than either egg, beef or lamb protein.

Activities:

1. Discuss the following milk processing methods:
   a. Pasteurization
   b. Homogenization
   c. Irradiation

   How does each affect our health?

2. Have available for class use containers of milk in its various forms. From information on the labels, decide which has the most calories per ounce and which is highest in each of the nutrients. Also compare prices to see which is the most economical form.

3. Have each student record his intake of milk over a 3 to 5 day period. Compare with RDA. Are they getting enough? Tell them not to forget milk used in other foods - cream soups, gravies, puddings, etc. Suggest ways to increase consumption.

4. Contact a local dairy for a representative to tell the class what happens to milk from the time it leaves the cow until it arrives on the grocer's shelf.

5. Read and discuss HELP's #1 and #2 with your class.

6. Milk Foods Crossword Puzzle. (HELP #3)

SOURCES:

Abrams, H. Leon, Jr. "Beward of Coffee, Tea and Cola Beverages If You Value Good Health." Consumers' Research Magazine. May, 1977.

HELP #1

Beverages

Many beverages common in the American diet today such as alcohol, coffee, tea, and cola drinks add little nutritive value except for water. However, milk and fruit and vegetable juices contribute fair amounts of minerals, vitamins, fats, and protein. This needs to be considered when choosing a beverage.

Alcoholic Beverages

Alcoholic beverages include those that are produced by fermentation only, such as beer, ale and most wines, and those that are distilled, such as whiskey. Their main contribution is limited to calories.

Coffee

Coffee is made from the coffee bean. It contains no known nutrients but does contain caffeine. Coffee quickens the respiration process, raises blood pressure, stimulates the kidneys, and excites the functions of the brain. It can temporarily relieve depression and fatigue. When excessively consumed it can aggravate heart and artery disorders and irritate the lining of the stomach. Because of the stimulation to the kidneys, iron and many vitamins are pumped through and out of the body before they can be properly utilized.

There are several coffee substitutes available. They are powdered vegetable preparations and usually have a barley or chicoryroot base. They do not contain caffeine.

Tea

Tea is probably the most popular beverage in the world. Tea, like coffee, contains caffeine. It also contains tannin (or t[illegible]ic acid) and oils that give it a distinctive taste. Sometimes cream or [illegible]lk and sugar is served with coffee and tea which increases their caloric value. However, neither coffee or tea can replace the need for milk.

Cocoa

Cocoa and chocolate contain starch, cocoa butter, and the stimulant theobromine. Chocolate drinks are usually considered more wholesome than coffee or tea because theobromine is a milder stimulant than caffeine and only a small amount of cocoa or chocolate is used in making a beverage. Usually the cocoa or chocolate is combined with milk which adds many nutrients.

Carbonated Beverages

These beverages are high in sugar content and have no nutritional value at all. To keep the sugar in suspension and keep it from crystallizing, all soft drinks contain acid, usually orthophosphoric or citric, which eats tooth enamel and can suppress the appetite and impair the stomach. Some soft drinks, especially cola, contain large amounts of caffeine. (For effects of caffeine see Coffee.)

Fruits and Vegetable Juices

These juices are excellent sources of minerals and vitamins. Juices from dark-green and yellow vegetables are especially high in Vitamin A. Many delicious and nutritious drinks can be made by combining these juices with milk and/or ice cream.

HELP #2

BEWARE OF COFFEE, TEA, AND COLA BEVERAGES IF YOU VALUE GOOD HEALTH

H. LEON ABRAMS, JR.

Associate Professor of Anthropology and Sociology, E.C.J.C.
University System of Georgia, Swainsboro, GA 30401

Coffee, tea, all beverages that have the word cola as part of their trade name, and some additional popular beverages contain caffeine. Caffeine is a powerful stimulant that can be injurious to your general health. In order to determine whether or not a beverage contains caffeine, read the contents on the label or can (except for 3 widely sold soft drinks, which have a special governmental exception from the labeling rule that applies to other products, and need not show the presence of caffeine as an ingredient). The drug caffeine is a natural ingredient of the coffee bean, the leaves of tea, cola (kola) nuts, and the maté plant. Not many persons are familiar with maté or yerba maté in our country. It is native to South America and is a very popular drink throughout Argentina and Southern Brazil. Maté beverage is used much as we use coffee and tea.

Cola nuts come from a tree that is native to tropical Africa but is now grown commercially in the West Indies, Brazil, India, and many tropical regions. In regions where cola trees are grown, many people chew the fresh nuts, which are actually seeds from the pods of the tree. In chewing the fresh nut, they get a lift from its stimulating property, namely caffeine. Cola nuts are shipped to all parts of the world where they are used primarily in the production of cola drinks. They give the cola beverages their distinct flavor, the cola flavor, as well as the stimulating qualities which come from the caffeine they contain. Cola beverages are very modern; they became of great commercial value only during the present century with the development and world-wide sale of cola soft drinks.

Coffee is also a native of Africa. It came out of the hills of Ethiopia around the year 1000 A.D. and entered the Middle East from there, probably around the 15th century or earlier. The Islamic religion, founded by Mohammed, forbids the drinking of alcoholic beverages, and that may be one reason why coffee became a popular drink in the Arabic World. From the Middle East it was introduced to Europe around the middle years of the 17th century.

Tea, one of China's many gifts to the Western World, was introduced to Europe in the early 1600's and soon became the major stimulating drug beverage of England. It was the major habituating drink used by the American colonists until the Boston Tea Party. The American colonists were so angry with the English that they switched to coffee; it has been our major stimulating beverage ever since.

These drug beverages are of relatively recent origin, in the history of man. It was during the 1600's that sugar began to become more plentiful, and its addition to these beverages made them more enjoyable to drink. During the past century, the consumption of stimulating beverages—and of sugar—has increased drastically.

Coffee, tea, the cola beverages, and cocoa (chocolate) belong to the family of xanthine stimulants. These are powerful stimulating alkaloids. The most widely used xanthine beverages are coffee, tea, and cola beverages, which contain caffeine, and cocoa (chocolate) which contain theobromine, a drug stimulant closely related to caffeine. Caffeine, in coffee, is a trimethylxanthine. Even once-daily use of some of these potent alkaloids is certain to exert some pharmacological action on one's body chemistry. There is no doubt that a certain degree of psychic dependence, that is, habituation, develops from the use of xanthine beverages. This also applies to the person who uses them in moderation, though regularly.

Caffeine is a powerful stimulant that acts on the central nervous system. It is habit forming, and many people develop a dependence on it throughout the day. As a stimulant, caffeine peps you up, it gives you a lift, and makes you feel more energetic and better, in general. That is why so many people say that they cannot get moving in the morning until they have a cup of coffee or tea. Then all during the day they keep on reinforcing this stimulation by drinking more coffee, tea, or cola drinks. Examples are the traditional "coffee breaks" at work. Many offices keep coffee ready for use whenever a person desires it. In this way, many people consume much more caffeine than they should, or realize.

When your central nervous system is excited by caffeine, you feel fine, but then as the effects wear off, you get a let-down feeling such as drowsiness, tiredness, lethargy, and fatigue often followed by depression. Just take a little more coffee, tea, or cola drink and your energy is restored. Fine, but did you ever stop to think what effect this constant stimulation to your central nervous system is having on your general health? Eventually, it can be disastrous.

in research upon the causes, cures, and prevention of degenerative diseases, discovered many years ago that caffeine is a major cause in upsetting one's body chemistry, and that it may be a contributing factor in causing degenerative diseases. Among the better known degenerative diseases are heart trouble, circulatory diseases, including high blood pressure, arthritis, cancer, certain lung diseases, cataracts, diabetes, and senility. Caffeine may upset the normal functions of the endocrine glandular system and one's metabolism (the body's life-maintaining physical and chemical processes).

Although most people do not recognize that caffeine drinks are really drug beverages, they are usually aware that they should not be given to small children. Caffeine greatly stimulates small children. Mothers find that small children need no stimulation or excitement as they have enough from just the experiences of growing up. People usually do not recognize that caffeine beverages also excite or stimulate adults too; their excitement is less noticeable.

People who drink coffee or tea usually say that they drink it because they like the taste. However, note that when these same people are given decaffeinated coffee or tea, they say they do not like it. Actually, what they are saying is that it does not give them the stimulation they are seeking, which comes from caffeine. They have become dependent on caffeine without realizing it and are not aware that the constant drinking of caffeine-containing beverages is damaging to their health. Often these caffeine-containing beverages, coffee, tea, and cola drinks, are combined with sugar or artificial sweeteners which may further contribute to disturbing normal body chemistry.

The average cup of coffee or tea contains from 100 to 150 milligrams of caffeine. It is surprising to most people to learn that coffee and tea contain about the same amounts of caffeine. Actually, while tea leaves contain just a little more caffeine than coffee beans, the finished product, a cup of tea or coffee, ends up with about the same amount of caffeine content. Besides these powerful alkaloids, tea also contains a high amount of tannin, which is a toxic material, whereas coffee contains specific oils which may cause gastrointestinal irritation. On the average, a bottle of any of the cola drinks contain from 35 to 50 milligrams of caffeine.

If taken in large enough amounts, the stimulant caffeine could even be lethal. Huge doses of caffeine given to animals in experiments caused the animals to go into convulsions which were followed by death. For humans, a fatal dose of caffeine is considered to be 10 grams, but it would be most unusual for anyone to take that much at one time, though caffeine is an ingredient of many medicines, and of foods also. However, there have been many cases in which caffeine has been implicated in either causing or contributing to serious diseases in humans.

In the June 26, 1971 issue of the famous British medical journal, THE LANCET, Dr. Philip Cole of the Harvard School of Public Health reported finding a relationship between coffee drinking and cancer of the lower urinary tract and the bladder.

The effect of drinking too much coffee or tea is given the name caffeinism. In the Dec. 18, 1967 edition of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, a case of this disorder is reported. Symptoms are insomnia, loss of appetite, loss of weight, irritability, feelings of flushing or chilliness; sometimes there is a low fever, or even conjunctivitis. The article further reported that these symptoms, or some of them, are common among people who drink much coffee, and this was noted particularly in certain occupation groups such as waitresses, people who have night jobs, theater people, and people who drive long distances at night. Another article in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Oct. 25, 1971, reported the case of a woman who suffered from extreme swelling in her feet. She drank around eighteen cups of coffee each day. When she stopped drinking coffee, the swelling disappeared. Later, when she began drinking large amounts of iced tea, the swelling returned. When she stopped drinking tea, again the swelling went away. This woman suffered for ten years from this painful swelling until it was discovered that caffeine was the cause of her illness. Another person who drank 15 to 18 cups of coffee a day suffered serious illness, with fever and loss of weight.

In the JOURNAL OF CLINICAL PHARMACOLOGY AND THERAPEUTICS, Vol. 10, 1969, the results of a study on the effects of caffeine conducted by members of the Department of Pharmacology of Stanford University are reported. They selected a group of thirty eight housewives who drank five cups or more of coffee each day and another group of eighteen housewives who did not drink coffee. They gave coffee to part of the group and decaffeinated coffee to the others. Those housewives who were not coffee drinkers showed no effects from drinking coffee that has had the caffeine removed. However, when these non-coffee drinkers were given regular coffee, they suffered adverse results such as feeling very nervous, being jittery, and some had upset stomachs. When decaffeinated coffee was given to the coffee drinkers, they became irritable, but when they received regular coffee, they perked up and felt fine. The experiment demonstrated how people develop a dependence on caffeine. Dr. Melvin E. Page has noted that when coffee drinkers give up coffee entirely or switch to decaffeinated coffee they often suffer from a headache from one to three days.

In the January 26, 1973 issue of MEDICAL WORLD NEWS, the results of heavy coffee drinking, as found by a group of doctors and scientists at the Boston University Medical Center, are reported. The researchers found that there seemed to be a relationship between heavy coffee drinking (more than five cups per day) and certain types of heart trouble.

Other studies have shown that coffee (caffeine) may increase the amount of fatty substances in the blood (an undesirable effect). In the Pharmacological Basis of Therapeutics, 3rd ed., 1965, Dr. J. Murdoch Ritchie reports that the xanthines (caffeine) in large doses may eventually cause cardiac irregularities. Sometimes arrhythmias are found in people who drink caffeine-containing beverages excessively.

A study carried out by Dr. R. S. Paffenberger of the University of California, at Berkeley, followed some 25,000 men from their college years to middle age. Dr. Paffenberger found that the coffee drinking habit was most

A study carried out by Dr R S Paffenberger of the University of California, at Berkeley, followed some 25,000 men from their college years to middle age Dr Paffenberger found that the coffee drinking habit was most closely linked to ulcers His findings showed that coffee drinkers had a 72 percent higher chance of developing ulcers than did those who never used coffee

To sum up, coffee, tea, and cola drinks or any beverages that contain caffeine are not desirable for those who wish to maintain sound health. Serious degenerative diseases can be a result of overuse of coffee, tea, and all caffeine-containing beverages Excessive drinking of these beverages upsets the general body chemistry system, which, in time, over the years, will finally call for a day of reckoning Sometimes one can stop drinking caffeine beverages and fully restore good, sound health In other cases, only limited repair can be achieved However, at any stage that one stops drinking caffeine-containing beverages, the individual is doing his body a favor and is helping to restore sound health The evidence clearly seems to indicate that people who use coffee, tea, and cola beverages may possibly be running a much greater chance of suffering from various diseases already mentioned—high blood pressure, heart attacks, fatty accumulations in the blood vessels, stomach ulcers, diabetes, and other degenerative diseases—than people who do not use them

Anyone wishing to be on the safe side would be wise to discontinue the use of coffee, tea, cola drinks, and all beverages and sweets that contain caffeine

It would be particularly important to keep cola drinks away from children, especially young children Some experts are expressing uncertainty about the harm done by caffeine, but there is no doubt that children should be kept from using coffee and the popular caffeine-containing soft drinks According to one report many children consume an amount of caffeine that is known to have deleterious effects on the central nervous system of adults. With children the matter is of special importance because their brains are still developing and are thus much more likely to be affected

Consumers' Research Magazine **May 1977**

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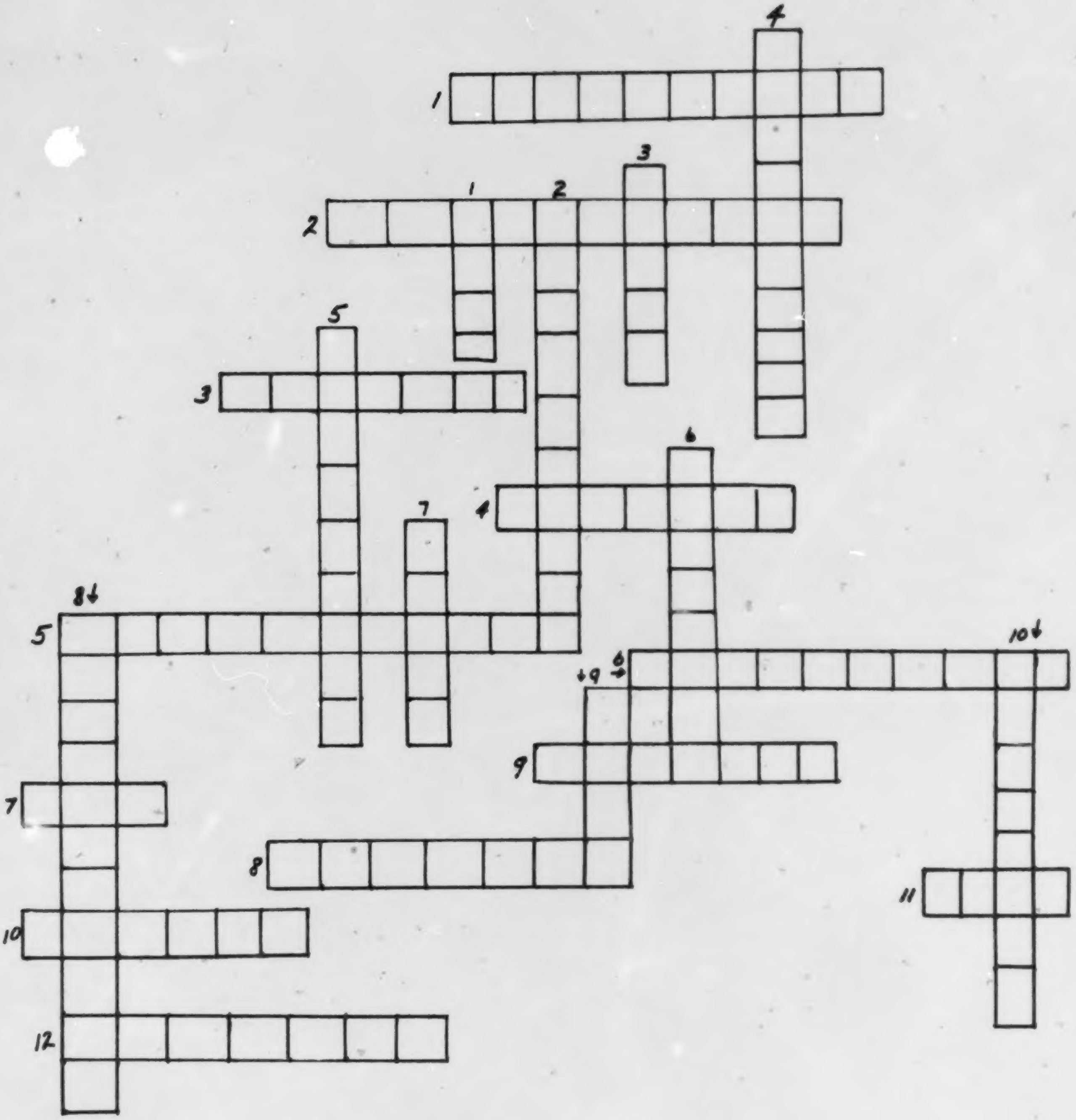
MILK FOODS

HELP #3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MILK FOODS PUZZLE

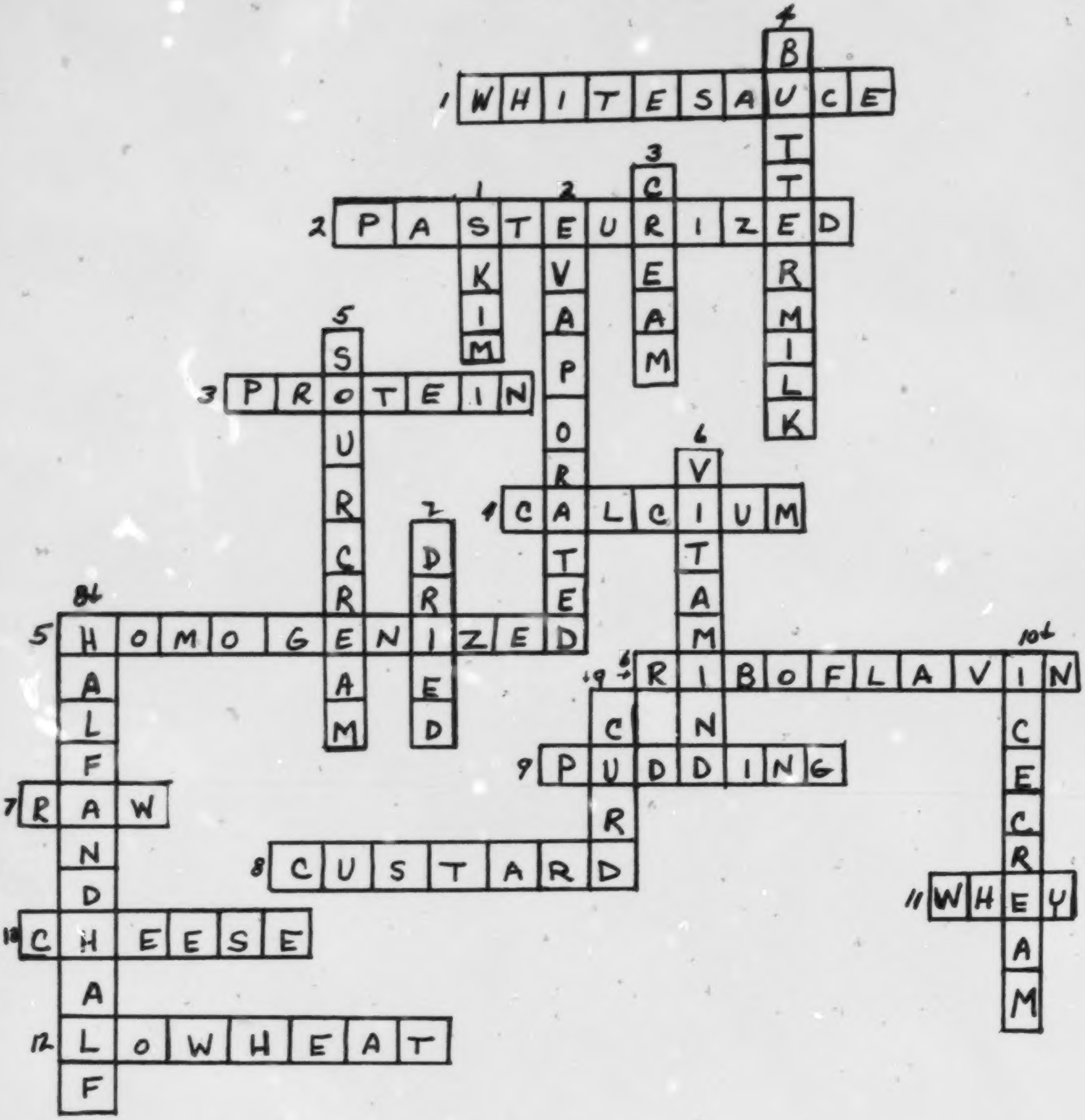
ACROSS:

1. The basis for cream soups and sauces.
2. Milk heated to kill bacteria.
3. A nutrient in milk.
4. A mineral in milk for bones and teeth.
5. Milk in which the fat will not rise.
6. A vitamin in milk.
7. Unprocessed milk.
8. A milk dessert thickened by egg.
9. A milk dessert thickened mostly by cornstarch.
10. A food that can be substituted for milk nutritionally.
11. The liquid part of milk.
12. A basic principal for milk cookery.

DOWN

1. Milk which has had the fat removed.
2. Milk which has had half the water removed.
3. The butterfat of milk.
4. Milk soured by fermentation.
5. Cream soured by fermentation.
6. Milk is frequently enriched with this vitamin.
7. All the water has been removed from this milk.
8. A blend of equal parts of milk and cream.
9. The solid part of milk.
10. A frozen dessert made from milk and cream.

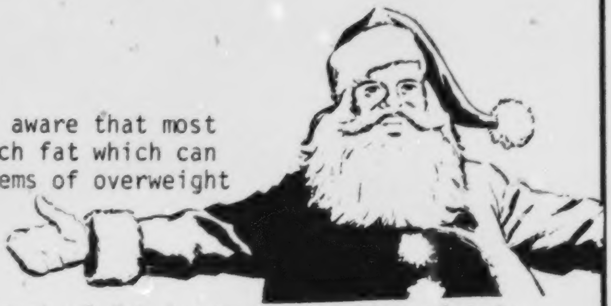
MILK FOODS


1 WHITESAUCE
2 PASTEURIZED
3 PROTEIN
1 CALCIUM
5 HOMOGENIZED
6 RIBOFLAVIN
9 PUDDING
7 RAW
8 CUSTARD
10 CHEESE
11 WHEY
12 LOWHEAT
4 BUTTERMILK
1 SKIM
2 EVAPORATED
3 CREAM
5 SOURCREAM
2 DRIED
6 VITAMIN
8 HALFANDHALF
9 CURD
10 ICECREAM

FATS
Jolly Old St. Nick. . .
Should Limit His Fat Intake

English
Health
Home Economics
Science

December



Objective: Students will become aware that most Americans eat too much fat which can lead to health problems of overweight and heart disease.

To The Teacher:

All of us need a certain amount of fat in our systems to maintain life and health. It's just that today we are eating much more fat than is necessary. We will explore the meanings of saturated and unsaturated fats as well as cholesterol - what it is and what it does as well as what we as individuals can do about too much fat in our diets.

It should be known, however, that fats do perform the following bodily functions: provide energy (two times as much as carbohydrates or proteins by weight); assist in blood clotting; carry vitamins A, D, E, and K throughout the body; support and cushion certain organs; and insulate the body against rapid heat loss.

Have students read over and discuss (HELP #1) Diet Related Disease sheet before beginning the activities.

Activities:

Using References and Information provided in (HELP #1 and 2):

1. Find the meaning of each of the following and tell how each relates to your diet. Saturated fats; unsaturated fats, (mono-unsaturated and polyunsaturated); Cholesterol; and Hydrogenated. In what foods are each of these fats found? Why do you think so many people are on cholesterol controlled diets?
2. Read labels from products at home, such as cooking oils, salad oils, margarine, butter, peanut butter, and cookies. Then compare to see what kind of fats they contain. Be suspicious if labels contain the words hydrogenated, hardened, specially processed, stabilized, partially hardened or hydrogenated. This means that unsaturated fat has been changed to saturated. Why do you think manufacturers hydrogenate fats?
3. Bring to class a sample of old-fashioned peanut and a sample of processed peanut butter for comparison. What differences are there? Which one will the consumer choose? Why? Do you think that education on the subject of saturated and unsaturated fats could make a difference in what the consumer brings home? Why?
4. Use (HELP #3) % of Fats in Food. The following is a high fat menu, please change it to a low fat one.

Breakfast: 2 fried eggs

2 sausage links fried

2 pieces of white toast and butter

Coffee

Snack: Chocolate covered donut

Coffee with sugar and a cream product

Lunch: Bologna and cheddar cheese sandwich (white bread)

Large Coke

Dinner: Fried ground beef patty

Mashed potatoes and butter

Corn on the cob and butter

Glass of whole milk

Salad with lettuce and avocado, oil and vinegar dressing

(See the calorie counter in the back of this book to find out how many calories this contains, then do the same for your low fat menu.)

5. Write down what you usually have for Christmas dinner. What ways could that meal be lessened in fats for the health of all the family members?
6. Evaluate the school lunch program - could low fat foods be offered to replace some which are high in fat content? Share what you find with the food service director.
7. Make a list of 10 ways to lower your fat intake - here's the first one: broil meats rather than frying in oils or fats.
8. Do one thing to make others aware of the importance of cutting fats and calories in their daily diets. (News report, bulletin board, etc.)

SOURCES:

Consumer Reports, "Cooking Oils & Fats," September 1973, Pgs. 553-557.

This material borrowed from the Energy, Food & You curriculum guide, a program of the Washington State Offices of Environmental Education (N.W. section) and Health Education.

*Katz, Deborah and Goodwin, Mary. Food: Where Nutrition, Politics and Culture Meet. Center for Science in the Public Interest, Washington, D.C. 1976.

"Way To A Man's Heart". American Heart Association.

HELP #1

Nutritional and Diet Related Disease

In 1972 George Briggs, Professor of Nutrition at the University of California (Berkeley), in a statement before the U.S. Senate Select Committee on Nutrition and Human Needs, estimated that malnutrition and food abuse account for about $30 billion a year, or about 30% of health care costs in America. Malnutrition can result from eating either too few or too many nutrients. Today many Americans are suffering the consequences of overeating. The following are some of the diseases associated with poor diets.

DISEASE	MAJOR DIETARY CONTRIBUTING FACTORS	PREVENTIVE DIETARY MEASURES
Coronary heart disease	•dietary cholesterol •saturated fat •excessive calories	•carefully controlled caloric intake •dietary fat intake limited to 30-35% of calories •decreased amount of saturated fat •strict limitation of cholesterol
High blood pressure (Hypertension)	•excessive calories/ obesity •excessive dietary salt	•carefully controlled caloric intake •reduced salt intake
Diabetes mellitus	•excessive calories/ obesity •excessive sugar consumption	•carefully controlled caloric intake •avoidance of refined sugar
Obesity	•excessive calories and lack of physical activity (with result that caloric intake exceeds expenditures)	•carefully controlled caloric intake
Dental caries	•excessive sugar consumption •consumption of forms of foods high in sugar that stick to the teeth	•avoidance of highly refined sugar •increased fruit, vegetable, and legume consumption
Cirrhosis of the liver	•excessive use of alcohol	•avoidance or reduction to small amounts of alcohol intake
Cancer of the colon	•high-fat and low-fiber diets	•dietary fat intake limited to 30-35% of calories •increased intake of whole grain (or bran), raw fruit and vegetables
Constipation Diverticulosis of the colon	•inadequate intake of fiber	•increased intake of whole bran, raw fruit and vegetables
Nutritional anemia	•inadequate intake of dietary iron, folic acid, or B-12 (Vitamin B-12 intake apt to be low only in strict vegetarians)	•adequate intake of iron, vitamin B-12, and folic acid)

Reprinted from *Food: Where Nutrition Politics and Culture Meet* which is available from the Center for Science in the Public Interest, P.O. Box 7226, Washington, D.C. 20044, for $4.50.

HELP #2

WAY TO A MAN'S HEART

To help you follow a fat-controlled, low cholesterol diet, here is some information about cholesterol and different types of fat in foods

CHOLESTEROL is a waxy material used in many of the body's chemical processes. Everyone requires it in correct amounts for good health, but too much cholesterol in the circulation encourages the development of heart and blood vessel diseases.

We get cholesterol in two ways: It is manufactured by the body from all foods; and we get it directly from foods of animal origin.

Egg yolks and organ meats are very high in cholesterol, and shrimp is moderately high in this substance. These foods are restricted in this diet. There is no cholesterol in foods of plant origin such as fruit, vegetables, grains, cereals, and nuts, and these foods are recommended.

SATURATED FATS tend to raise the level of cholesterol in the blood and are therefore restricted in this diet. These are fats that harden at room temperature, and they are found in most animal products and some hydrogenated vegetable products:

Saturated animal fats are found in beef, lamb, pork, and ham; in butter, cream, and whole milk; and in cheeses made from cream and whole milk.

Saturated vegetable fats are found in many solid and hydrogenated shortenings; and in coconut oil, cocoa butter, and palm oil (used in commercially prepared cookies, pie fillings, and non-dairy milk and cream substitutes).

POLYUNSATURATED FATS, which are recommended in this meal plan, are usually liquid oils of vegetable origin. Oils such as corn, cottonseed, safflower, sesame seed, soybean, and sunflower seed are high in polyunsaturated fat. They tend to lower the level of cholesterol in the blood by helping the body to eliminate excess, newly-formed cholesterol.

Olive oil and peanut oil are also vegetable products, but they are low in polyunsaturated fats. You might want to use them for flavor occasionally, but they do not take the place of polyunsaturated vegetable oils. Your daily intake of salad dressings, cooking fats, and margarines should emphasize the recommended polyunsaturated vegetable oils for their cholesterol-lowering effect.

TOTAL FAT is low in chicken, turkey, fish, and lean veal, and they are recommended.

HYDROGENATION changes liquid fats to solid fats. *Completely* hydrogenated (hardened) oils resemble saturated fats and should be avoided or used in moderation; but most margarines and shortenings containing *partially* hydrogenated oils also contain acceptable amounts of polyunsaturates.

Questions and answers about this diet

HOW IS THE HEART AFFECTED BY EXCESSIVE CHOLESTEROL AND FAT IN THE DIET?

A certain amount of cholesterol must always be present in our systems to maintain life and health; but when we eat too many foods rich in cholesterol and saturated fats, surplus cholesterol enters the bloodstream, and contributes to the buildup of atherosclerosis.

In atherosclerosis, cholesterol deposits become embedded in the lining of the artery walls. These deposits accumulate over many years, narrowing, roughening, and scarring the channel through which the blood flows. Eventually an artery may close off completely, either because the deposits have grown together, or because a blood clot plugs up the narrowed passageway.

Wherever an artery is completely closed, there is damage to the part of the body that depends on the blocked artery for some of its blood supply. If the blockage occurs in a major artery serving the heart muscle (coronary artery) the result is a heart attack.

WHO GETS ATHEROSCLEROSIS? AT WHAT AGE IS IT MOST LIKELY TO CAUSE TROUBLE?

Atherosclerosis begins to develop early in life. It is commonly found in the arteries of young men in their twenties and late teens. Most people have it in a mild form, however, and live to an old age without troublesome symptoms. In others the disease progresses rapidly, and they are likely to have heart attacks in the prime of life.

It is not fully understood why some people are more susceptible than others to the serious results of atherosclerosis, but scientists have identified some of the factors that increase the risks: high levels of cholesterol in the blood; overweight;

cigarette smoking; lack of exercise; high blood pressure; diabetes; and family inheritance of a tendency to heart disease.

There is much encouraging evidence that most people—including those who inherit a *tendency* to heart disease—can substantially reduce their risk of having a heart attack if they follow a diet to control blood cholesterol levels; avoid cigarette smoking; maintain a normal weight; exercise regularly; and get medical treatment if they have high blood pressure or diabetes.

A fat-controlled, low cholesterol diet is the subject of this leaflet. For information about additional ways to reduce the risk of heart attack, ask your Heart Association.

WHAT IS INVOLVED IN FOLLOWING THIS DIET? MUST I MAKE DRASTIC CHANGES, AND CUT OUT ALL CHOLESTEROL AND SATURATED FAT?

The plan in this leaflet calls for moderate, not drastic changes in your diet. It is not advisable or even possible to eliminate saturated fats and cholesterol completely, for they appear to some extent in many essential foods.

There are four goals to keep in mind in following this plan:

- **To meet your daily need for protein, vitamins, minerals, and other nutrients.**
- **To control calories and maintain a desirable weight.**
- **To avoid eating excessive amounts of food containing saturated fat and cholesterol, by lowering your total intake of such foods.**
- **To eat less total fat and to substitute margarine and polyunsaturated fats wherever possible.**

You may have to change some of your longstanding eating habits, but you won't have to give up all of your favorite dishes. This is what will be involved:

To control your intake of cholesterol-rich foods:

- **Eat no more than three egg yolks a week, including eggs used in cooking.**
- **Limit your use of shrimp and organ meats.**

To control the amount and type of fat you eat:

- **Use fish, chicken, turkey, and veal in most of your meat meals for the week; use moderate-sized portions of beef, lamb, pork, and ham less frequently.**
- **Choose lean cuts of meat, trim visible fat, and discard the fat that cooks out of the meat.**
- **Avoid deep fat frying; use cooking methods that help to remove fat—baking, boiling, broiling, roasting, stewing.**
- **Restrict your use of fatty "luncheon" and "variety" meats like sausages and salami.**
- **Instead of butter and other cooking fats that are solid or completely hydrogenated, use liquid vegetable oils and margarines that are rich in polyunsaturated fats.**
- **Instead of whole milk and cheeses made from whole milk and cream, use skimmed milk and skimmed milk cheeses.**

Ask your Heart Association for the companion piece to this diet leaflet—RECIPES FOR FAT-CONTROLLED, LOW CHOLESTEROL MEALS (50-020-B).

WHO SHOULD FOLLOW THIS MEAL PLAN?

This plan is mainly for adults from their twenties on who have a family history of heart disease, or who may have increased their risks through a regular diet high in saturated fat and cholesterol. Children and adolescents, especially from susceptible families, can also benefit from this meal plan by forming tastes for food early in life that may protect them from heart disease when they reach adulthood.

The *types* of food recommended in this leaflet are suitable for most people from childhood through maturity. The *amounts* of food specified in the food lists, however, are recommended mainly for the average adult. Nutritional needs differ during growth periods of infants, children, and adolescents, and during pregnancy and breast feeding; at these times, the amounts of food to be eaten should be regulated by a physician.

SOURCE:

American Heart Association

HELP #3

PERCENTAGE OF FAT IN FOODS

	DAIRY	POULTRY	FISH	BEEF	PORK	LAMB	VEGETABLE
VERY LOW FAT less than 21% of calories from fat)	Buttermilk, if made from skim milk only Low fat cottage cheese Low fat milk (1/2 to 1% milkfat by wt) Skim Milk Skim milk cheeses	Light meat chicken without skin (baked, boiled, roasted) Light meat turkey without skin	Most fish fillets, including cod, flounder, haddock, perch, pollock, sole Most shellfish, including crab, lobster, shrimp, scallops Tuna in Water				
LOW FAT (21-40% of calories from fat)	Ice milk Low fat milk (2% fat by wt) Low fat yogurt, plain Regular cottage cheese (4% fat by wt)	Chicken liver (not fried) Dark meat chicken, without skin (baked, boiled, roasted) Dark meat turkey without skin	Salmon, pink or chum-canned	*Roasts: rump, armbone, round *Steaks: flank, round, and wedge or round-bone cut of sirloin Beef liver (not fried)		*Leg *Loin	
MEDIUM FAT (41-60% of calories from fat)	Ice cream, regular Part-skim mozarella Part-skim ricotta Whole milk Whole milk yogurt	Fried chicken, most cuts	Herring Sardines Salmon, red, Atlantic or King	*Roasts: rib or blade *Steaks: porter-house, T-bone, club, or hipbone sirloin	*Ham *Pork loin or shoulder	Untrimmed leg *Lamb chops	
HIGH FAT (more than 60% of calories from fat)	Ice cream, rich Whole milk cheese, including blue, brick, camembert cheddar, Swiss, most processed cheeses			Corned beef Ground beef Untrimmed meats, except round steak	Bacon Processed meats: bologna, deviled ham, frankfurters liverwurst, salami Spareribs Untrimmed ham, pork loin or shoulder	Untrimmed lamb chops Untrimmed Loin	Avocado Margarines Nuts and nut butters Olives Shortenings Vegetable oils

*Denotes cuts that have been trimmed of *all* outside fat.
Source: Compiled by Center for Science in the Public Interest based on data by U.S. Dept. of Agriculture.

Note: Values for meat products reflect averages of samples studies by U.S. Dept. of Agriculture.
Due to variation of fat content of meats, cuts will sometimes be leaner or fattier than listed.

WEIGHT CONTROL
or
WAS SANTA'S FAMILY FAT?

Biology (Genetics)
English
Geography
History
Social Studies

December

Objective: The student will learn that life styles influence eating habits and nutrition. Although basic nutritional needs are the same, the amount needed will vary with age, sex, and activity.

To The Teacher:

An excessive intake of calories can result either from the kind or amount of food eaten. Some foods have more calories than others and any number of things can encourage a person to consume more calories than his body requires. Certain eating patterns are handed down from one generation to another, such as regularly serving high-calorie dishes like spaghetti, apple pie ala mode, etc.

Psychological factors also can play a role in over-eating. Many people use food as a relief for tension, worry, boredom, frustration or the feeling of being rejected.

Social customs also play an important role. Candy and other sweets are standard gifts and "rewards." Most hostesses serve their most elaborate menu for guests - one that is usually very high in calories. The cocktail party has added its share of calories too in the alcohol, dips, nuts, and potato chips one consumes at such a party.

There are some physiological reasons for obesity as well. Some metabolic disorders such as thyroid imbalance, can cause a tendency to be overweight. If the hypotholmus gland is injured, an increased appetite results. These problems are serious, but they are also rare.

Another physiological factor that may be at work is the genetic one - the hereditary disposition to take on weight. A number of studies show a definite relationship between the weight levels of heavy children and their parents. This same pattern is not as evident in children adopted by over-weight parents, so it is likely that the tendency to become overweight is passed on through the genes.

Activities:

1. Read "Through the Life Cycle" (HELP #1). Teacher should read it orally to class and discuss it. Or make copies as homework assignment to read and discuss next day. Holidays are a time when the family is together. It should be helpful to learn about the special needs of each age group.

2. Have students research life style and common diet of people in other cultures. Example: Japan, Germany, American Indian, etc. Are these people overweight as a nation? Why or why not? Is there any common disease in their culture related to nutrition?

3. Prepare and distribute "Three-Generation Questionnaire" (HELP #2) to students. Have students interview two people - one of their parents' generation and one of their grandparents' generation. The students themselves make up the third generation. Emphasize that respondents needn't be the student's parent or grandparent but only about the same age.

   Have students write a response to each of the people they interviewed. What is the most important thing you learned about foodways in other times? What are the major changes that have occurred in this person's lifetime? What other things would you like to know about foodways that you didn't get to ask? How do the survey and the new things you learned from it make you feel about your own foodways? Based on past changes, can you anticipate future foodways?

   Have students form small groups to discuss their results.

4. Have students write an essay on family food traditions. (Example: oyster stew on Christmas Eve.) When did the traditions start? Do they serve a purpose? Will the student continue the tradition when he has his own home?

SOURCES:

Katz, Deborah and Goodwin, Mary T., Food: Where Nutrition Politics and Culture Meet. Center for Science in the Public Interest. Washington, D.C., 1976.

Nutrition Curriculum developed by Garfield School District RE-2. East Central BOCS.

"Through the Lifecycle"

TEENAGERS

Adolescents are particularly vulnerable to poor nutrition. At no other time during the life cycle, with the exception of pregnancy, are the amounts of nutrients needed greater. Both growth and development demands and the emotional stress of this sometimes turbulent period increase nutritional needs, especially for calcium, protein, iron, vitamin C, vitamin A, and a number of other nutrients. Some of the major factors that contribute to poor food choices among adoloscents are:

*the desire to break away from childhood eating habits and establish their own identities;
*the model, movie star, or super athlete image promoted by Madison Avenue advertising;
*a lifestyle of eating on the run and snacking, instead of sharing family meals
*the aggressive merchandising of nutritionally dubious foods by the media, shops, supermarkets, drive-in restaurants, and sometimes even schools.

Teenagers are consuming soft drinks, crisp fried foods, pastries and cake in increasingly alarming amounts, while milk, fruit and vegetable consumption has decreased. Teenagers eat an estimated 140-150 pounds of sugar per year, considerably more than the national average.

Poor eating habits may result in deficiencies. The semi-starvation diets followed by some teenage girls deplete nutrient stores. Several studies have found low intakes of vitamins A and C, iron, and calcium in teenage diets. Authorities suspect deficiencies of trace minerals, such as zinc and chromium.

Parents, teachers, school administrators, and classmates can help teenagers obtain balanced diets by providing wholesome, nutritious and tasty foods and snacks in place of the sugar and fat-laden foods so often chosen by teenagers. At home, even if meals are eaten on the run, parents and teens can prepare casseroles and protein foods, and have a fruit bowl and raw vegetables within reach. A variety of cheeses, whole grain breads, granola, jars of nuts and seeds, etc. make fine snacks and treats.

A SPECIAL NOTE FOR TEENAGERS AND ADULTS

Americans are using more and more drugs - both medicinal and "social." While disease can be controlled and body functions regulated by drugs, physicians are learning that certain medications may produce nutritional deficiencies. Prescribed drugs can decrease absorption, increase excretion, or restrict utilization of specific nutrients.

Amphetamines, which are used to depress the appetite to produce weight loss, may interfere with the absorption of some nutrients. Initial weight loss is related to decreased food intake, but as tolerance to the drugs develops, appetite increases and weight loss only continues if caloric restriction is imposed. Nutritional considerations aside, this group of drugs may produce serious adverse effects on circulatory and nervous systems.

People on long-term and multiple drug regimens are the most often afflicted by drug-induced deficiency states. Short-term drug therapy is generally not a cause for concern. Drug-associated nutritional deficiences usually have several causes. The drug increases requirements for a nutrient or interferes with nutrient utilization; the diet is insufficient for the needs of the individual; previous or present disease, such as chronic infection or alcoholism, also may interfere with utilization of nutrients.

People using any drugs should consult their physician or see a nutritionist about possible nutritional side effects.

"Through the Lifecycle," Con't.

ADULTS and MIDDLE AGE

America has its own peculiar form of malnutrition, a diet too high in calories, fat, and refined sugar and starch. The tendency to consume too many calories is obviously encouraged by the relatively sedentary lifestyle that urbanization and automation have made possible, and by the aggressive marketing of foods that are high in calories and low in nutrients, such as soda pop, candy, alcoholic beverages, and snack foods.

Adult Americans are suffering incalculable pain, paying enormous medical costs, or dying prematurely because of illnesses such as diabetes, heart disease, and bowel cancer. These illnesses are occurring on an epidemic scale in Western nations and are caused, at least in part, by diet and other controllable factors. Most people assume that these serious illnesses are a natural and inescapable part of life, yet they are virtually unknown in some cultures. In short, these may be considered "unnecessary diseases." The unnecessary diseases develop slowly and quietly - not like measles or chicken pox - and reflect the gradual disintegration of bodily organs and processes. They may begin in childhood, but not be mainfest until middle or old age. Good eating patterns are important throughout life, but for the middle aged they may mean the difference between life and death. Many adults have difficulty changing lifetime eating habits. Yet change is often crucial to continuing health.

The Panel on Nutrition and Health of the Senate Select Committee on Nutrition and Human Needs stated in a 1974 report that a "few simple changes in the American diet and habits of life could greatly reduce the number of people who acquire diet-related diseases and may die from them." In its report, the Panel strongly recommended that Americans switch to a diet low in calories, saturated fat, sugar, cholesterol, and salt:

> The "alternative diet" is designed to prevent disease and, at the same time, is nutritionally adequate. Because it is largely but not completely derived from legumes (pod vegetagbles: beans, peas, peanuts, etc.), grains, vegetable and fruit products, it is less expensive to produce in terms of resources than the present American diet based much more on food products derived from animals. It has this additional feature of ecological soundness at a time of world food shortages.

Some recent studies show that heart disease may be reversed by a restricted fat diet and a program of controlled excercise. Middle aged Americans should heed this advise. Physical exercise and a carefully controlled diet can add many active years to life.

"Through the Lifecycle," Con't.

SENIOR CITIZENS

In recent years malnutrition in the aged has attracted considerable concern. Certain dietary deficiencies may even stimulate aging, such as impaired vision from vitamin A deficiency; thyroid goiter from inadequate iodine in the diet; loss of teeth from vitamin or mineral deficiencies; and anemia from inadequate iron or other nutrients needed for blood formation.

Many of the elderly suffer from osteoporosis, a gradual softening of the bones. Osteoporosis may lead to deformities of the spinal column, causing forward stooping and painful pressure on the nerves. Bone fractures occur more easily as a result also. Inadequate protein and calcium intake, lack of physical exercise, inadequate production of sex hormones, and possibly excessive phosphorus intake, contribute to osteoporosis. Prevention of bone disease should begin early in life. A diet adequate but not excessive in good quality protein and calcium, and a sustained program of physical exercise contribute to healthy bone.

Aging may be accompanied by disorders which affect nutrient absorption or food intake. Some drugs interfere with utilization of certain nutrients. Mineral Oil, frequently used as a laxative, reduces the absorption of fat-soluble vitamins Diminished sense of taste (possibly due to zinc deficiency), and loss of teeth may result in a disinterest in eating. People who work with the elderly must consider these factors for nutrition counseling.

Accessibility to grocery shopping, adequate storage of food preparation facilities, sufficient money for food, and a pleasant eating environment are often out of reach for senior citizens.

The community should understand and assist the elderly in maintining a healthy diet:

*Since lack of interest in eating is common, especially if eating alone, communities should encourage senior citizen clubs and activities which bring people together to share meals in pleasant surroundings. Some schools encourage senior citizens in the neighborhood to come for lunch.

*With the high cost of living, many senior citizens have little money left for food. To help them, federally-assisted programs, such as food stamps, meals on wheels (when ill or convalescing), or a neighborhood lunch program, are available. Old people may reap the benefits from taxes they paid when employed.

*When housing for senior citizens is constructed, adequate food preparation space and convenience shopping services should be included.

HELP #2

THREE GENERATION QUESTIONNAIRE

QUESTION:	RESPONSES BY GENERATION		
	GRANDPARENTS	PARENTS	MINE
1. What foods did you and your family eat when you were young that you don't eat as much of, or at all, now?			
2. Where did you get your food? (Response should be specific: Supermarket, small store, Farmers market, home garden, wild plants, hunting and fishing, etc.)			
3. Who prepared the meals? With anyone's help? How much time did the cook spend on meal preparation			
4. Were there people in your town or neighborhood who ate much differently from your family?			
5. How often did the whole family eat together? Were mealtime different then?			
6. What days of the week or year did you eat "special" meals?			
7. What major changes have occurred in food technology since you were a kid? What kinds of gadgets or new foods have become available?			
8. Did you eat any foods in order to cure illnesses or injury? Which ones?			

	RESPONSES BY GENERATION		
QUESTION:	GRANDPARENTS	PARENTS	MINE
9. Did you avoid eating any foods because they were believed to cause illness or injury? Which ones?			
10. Are you fond of any food because it reminds you of places, things, or people of the past?			
11. Do you eat any foods today that seemed strange or unappetizing when first introduced to you?			
12. What foods or types of food did you particularly cherish when you were young? What foods were considered "fancy" or "special"?			
13. Do you think foods are better or worse today?			
14. What changes in food and food customs do you appreciate? What changes do you regret?			

Reprinted from Food: Where Nutrition Politics and Culture Meet which is available from the Center for Science in the Public Interest, P.O. Box 7226, Washington, D.C. 20044, for $4.50.

PRE-NATAL NUTRITION
or
"EATING FOR FUTURE GENERATIONS"

Health
Home Economics
Social Studies

January

HORSE SENSE

Objective: The student will learn that the pregnant teenager has special dietary needs.

To The Teacher:

Our grandparents probably thought that all humans required the same food at all ages and in all circumstances. Today we know that is not true. Babies, growing children, teenagers, pregnant women, lactating mothers, and men and women of different weights and ages all have different dietary requirements.

Since more and more babies are being born to teenage girls, pre-natal nutrition for teens becomes a very necessary part of their education. Since the pregnant woman and the lactating mother are actually providing food for two, a general rule of thumb might be "more of everything". In general, that is true. In HELP #4, we see a comparison of the nutritional needs of the normal woman, the pregnant woman, the lactating mother and the pregnant teenager who presents a special problem. Her own body is still growing too and that condition has to be met nutritionally as well as the needs of her unborn child.

As we begin a new year, let's help the students realize that the start they might give their child depends quite a lot on the mother's pre-natal nutrition.

A DAILY FOOD GUIDE:

Eat a well-balanced diet of natural foods. Avoid foods high in saturated fat, sugar and food additives. Avoid salty foods and over-use of table salt if your family has a history of high blood pressure. Avoid all medication - even aspirin - without good reason. Always consult your physician before taking any drug.

Despite strong evidence to the contrary, some doctors continue to advise patients to limit their weight gain. Adequate weight gain is essential for the proper development of the baby. An average weight gain of 25 pounds is recommended but the amount of food needed depends on body size, activity, age and weight. Overweight women should not try to lose weight during pregnancy.

Activities:

1. As a pre-test have students complete "We Are What We Eat". (HELP #1)
2. Read and discuss in class "Eating For Two". (HELP #2)
3. Have students complete "Pregnancy and Nutrition Worksheet" (HELP #3) either as a class discussion or individual assignment.
4. Assign students a culture other than our own to research. Study their food habits and suggest a daily diet using their ethnic foods that would meet the nutritional requirements of a pregnant teenager. (see HELP #4)

SOURCES:

Katz, Deborah and Goodwin, Mary T. Food: Where Nutrition, Politics and Culture Meet. Center for Science in the Public Interest. Washington D.C. 1976.

We Are What We Eat - And So Are Our Children, Nutrition curriculum developed by Marilyn E. Hagans, Karval School District RE-23, East Central BOCES. Developed with NET Program Funds.

Name______________________________ HELP #1

Date______________________________

WE ARE WHAT WE EAT

TRUE/FALSE: Read each statement carefully. Place a T in the blank if true and an F in the blank if false. (5 points each)

_____1. Affects from poor diet habits as a teenager can be corrected by good diet habits as an adult.

_____2. Weight gain during pregnancy should be strictly controlled to less than 10 pounds.

_____3. Heavy smoking during pregnancy could cause less oxygen to reach the fetus.

_____4. During pregnancy, the best snacks are those high in calories for energy.

_____5. Drugs will not affect fetal development as long as usage is stopped during pregnancy.

_____6. Education and psychological maturity will affect the risk involved in a pregnancy.

_____7. Additives and preservatives approved by the FDA will not have any effect on the development of a fetus.

_____8. A lasting effect that can result from a person's diet is hemophilia.

_____9. A deficiency of a nutrient needed by the fetus can easily be detected by comparison of that infant to an infant that experienced good prenatal nutrition.

____10. A nutrient dense food is one high in the nutrient we call "calories."

MATCHING: For each term or phrase listed in the left column there is a description in the right column that is related to how that term might affect prenatal development. Write the letter of the correct match in the blank beside each term. (5 points each)

1.______ protein

2.______ iodine

3.______ tetracycline and streptomycin

4.______ morphine and heroin

5.______ estrogen

6.______ zinc

7.______ iron, calcium and phosphorous

8.______ milk

9.______ iron, calcium, protein

10.______ brussel sprouts, cabbage and papaya

A. deficiency related to missing limbs, cleft lip, curved spine
B. related to normal blood and bone development
C. nutrient most critical to normal fetal development
D. use during pregnancy can cause hearing loss, staining of teeth and cataracts in the fetus
E. rich in vitamin C for healthy teeth, gums, bones; strong body cells
F. recommend 4 eight-ounce cups daily
G. use can cause infants to be born as narcotic addicts
H. hormone that may be linked to birth defects of the heart
I. deficiency can cause severe mental retardation, visual and hearing loss and possible link to cerebal palsy
J. nutrients often missing in teenage mothers-to-be diets

ANSWER KEY

True/False

1. F
2. F
3. T
4. F
5. F
6. T
7. T
8. F
9. F
10. F

Matching

1. C
2. I
3. D
4. G
5. H
6. A
7. B
8. F
9. J
10. E

HELP #2

EATING FOR TWO

There are good reasons to be concerned about the food habits of teenagers. Teenagers are casting off the habits of childhood while still trying to find their own identities. As a result, good food habits may be lost for a while.

One out of every four mothers has her first child when she is less than 20 years old. The teenage appetite is often huge, but appetite alone is not enough to insure that the teenager will get all of the nutrients he or she needs.

During their teens, boys and girls grow at a faster rate than at any other time except in infancy. A boy's nutritional requirements during the time he is becoming a man are higher than at any other time in his life.

Those of a girl becoming a woman are exceeded only during pregnancy and lactation (the period following birth when the mother's breasts are manufacturing milk). So, a pregnant teenage girl has even greater nutrient needs.

Unfortunately, pregnant teenagers are the most negligent about nutrition. Junk foods and fad diets are a large part of their eating habits. To add to the problem some teenagers cut down on their food intake drastically when they discover they are pregnant so they won't "show".

Malnourished mothers have a tendency to produce underdeveloped babies. A baby can suffer from malnutrition even before it is born! A baby weighing less than 5 1/2 lbs. at birth has fewer brain cells and a more difficult time his/her first year of life.

This is why prenatal care is so important - especially for teenagers who are producing more babies each year. Recent statistics released by the March of Dimes shows that the number of mothers under the age of 16 has increased 80% during the last 15 years.

Research has shown that pregnant teenagers' diets are usually lacking in iron, calcium, vitamins A and C, and protein. Of all these, protein is the most important for normal growth and development of the fetus.

The pregnant teenager of average build should expect to gain 20-25 lbs., and most of this during the latter half of her pregnancy. It is especially important to make wise food choices that are rich in nutrients and not high in calories. Vitamins and mineral supplements will be recommended by most doctors.

RECOMMENDED DIET PLAN

Major Nutrients	Food Sources	Serving Size	DAILY SERVINGS	
			Pregnant Teen	Prengant Woman
Protein and Calcium	Milk Yogurt Cheese Ice Cream Cottage Cheese	Milk 1 c. Yogurt 1 c. Cheese 1 1/2 oz. Pudding 1 c. Ice Cream 1 3/4 c. Cottage Cheese 2 c.	5	4
Protein and Iron	Meat Fish Poultry, Eggs Beans Grains, Nuts	Meat, Fish, Poultry 2 oz. Eggs 2 Dried beans 2 oz.	4	3
Vitamins A and C Folacin	Citrus Fruits Other Fruits Leafy, red/orange, green vegetables Potatoes	Cooked or juice 1/2 c. Raw 1 c. Fruit medium	5	5
Thiamin, B6, Riboflavin, Folacin, and Iron	Whole Grain & enriched breads & cereals	Bread 1 slice Ready to eat cereal 1 c. cooked cereal or pasta 1 c.	4	4
Water	Juices Fruits Vegetables Water Milk	Juices 1/2 c. Fruits 1 med. Vegetables 1/2 c. Water 1 c. Milk 1 c.	6	6

COMMON QUESTIONS ABOUT PREGNANCY

HOW MUCH WEIGHT SHOULD I GAIN?

If you are close to your ideal body weight, it is recommended to gain between 20-25 pounds. The way you gain is just as important as the amount you gain. The first three months you should gain between 2-3 pounds and for every month following, 3/4 of a pound per week. If irregular weight gain occurs, consult your doctor, but regular visits to your doctor, and proper diet should prevent this from occurring.

IN OTHER WORDS, SHOULD I CONTINUE EATING THE WAY I DID BEFORE I WAS PREGNANT?

No! When you are pregnant your nutrient and caloric needs increase. You will need to increase your calories by 300. By following the recommended guidelines of good nutrition during pregnancy, you will increase your chances of having a healthy baby.

ARE THERE NUTRIENTS DEFICIENT IN A PREGNANT WOMAN'S DIET?

Good sound nutrition is important for both the mother and child. During pregnancy most women are deficient in iron, calcium, folacin, and B6. If one follows the basic guide provided, the requirements for the above vitamins and and minerals should be adequate.

SHOULD I BE CONCERNED ABOUT MORNING SICKNESS?

You must remember the importance of eating correctly. Usually, morning sickness occurs during the first three months. If you are unable to eat, try eating a cracker or toast and remain lying flat and still in your bed for a short time. Also eating six small meals a day may be helpful. If these tips do not help, consult your doctor for further recommendations.

WHAT ABOUT NUTRITIONAL GUIDANCE?

Do not get discouraged when planning your new diet. Local health departments, doctors, dietitians, or any health agency in your community could offer you assistance.

SHOULD I DIET?

Pregnancy is not the time to lose weight. You may not require the same amount of weight gain as a thinner person, but you will need to gain some in order to support your child.

WHAT IS ANEMIA?

Anemia is caused by not enough iron supply in your body to take care of the red blood cells. Iron is important in forming hemoglobin. Hemoglobin is the molecule used to carry oxygen to the cells of your body - including your baby. If diagnosed, anemia may be corrected by a proper diet and iron supplements recommended by your doctor or dietitian.

IS A VEGETARIAN DIET ADEQUATE?

If a vegetarian diet includes eggs, milk, cereals, nuts and beans, it can be adequate. But if it does not include these, the proper amount of nutrients may not be provided. If you choose a vegetarian diet, consult your nutritionist for proper food choices.

WILL CIGARETTES, ALCOHOL AND DRUGS AFFECT MY BABY?

All substances consumed by the mother will reach the baby. Therefore eliminate the use of these items when pregnant. Cigarettes, alcohol and drugs have been noted to alter the proper development of the unborn child.

PREGNANCY AND NUTRITION WORKSHEET

Imagine that you are the staff of a community health clinic. Every week a meeting is held for pregnant women who have questions or concerns about nutrition. Each of the women attending is concerned with providing proper nutrition for herself and her developing child. How would you advise each person?

For each situation record:

- whether diet is adequate or inadequate
- excesses or deficiencies that may result from the diet; other dietary problems
- possible effects of lifestyle on diet
- changes you would recommend

The situations:

- Maria has recently decided to become a vegetarian. She has decided to exclude not only meat but all animal products, including dairy products such as milk, cheese, eggs and yogurt from her diet. She is eating a wide variety of whole grains, fresh fruits and vegetables and is carefully planning meals to obtain adequate amounts of protein by combining complementary plant foods.

- Susan began to drink beer and wine at parties when she reached drinking age. She didn't like them at first, but all her friends drank alcohol, so she persisted and soon acquired a taste for it. Later she tried an occasional mixed drink at parties. Soon she found that she enjoyed a drink after work each day and sometimes before bed. Most of her friends drink about the same amount, so it seems normal to Susan.

- Carol used to be overweight, but managed to lose a lot of weight a few years ago. She's proud of her slender figure and would like to stay slim. She intends to continue her active life with friends during her pregnancy, and in order to keep her weight down, she intends to eat less than usual.

- Anna loves to eat—but mostly between meals. She just can't get enough potato chips, pretzels and sweets. Frequently she'll drink a few bottles of soda pop a day. She's often so full from these snacks that she'll skip one or more regular meals. But she figures as long as she stays close to her proper weight (she's just a few pounds over...), she must be eating all right!

- Wendy started worrying about her diet a few years ago. She didn't feel very well and decided she wasn't getting enough vitamins. She now takes several vitamin supplements daily and has begun taking protein supplements as well. She figures that since her baby's development will probably demand some of her nutrients, she should double the amount of vitamin tablets and protein supplements she now takes.

- Ruth is 17. She enjoys sports and partying and being active. She always seems to be doing something, and pregnancy hasn't slowed her down at all. She picks up food whenever she has time, often at a fast-food restaurant, but has been known to skip a meal when she's on the run. She's too busy to think much about food, and besides she doesn't want to gain too much weight during pregnancy.

- Sara has been very concerned about her diet for several years. She is careful to eat a balanced and varied diet of natural foods. Each day she eats a variety of fruits and vegetables, dairy products, whole grains, and protein foods.

For a stimulating follow-up to the activity, stage a role play based on the situation and characters above. Ask for volunteers to play each woman described. Ask for three or four volunteers to play nutrition counselors. Have the students role play the meeting, based on class discussion and recommendations for each character.

Reprinted from *Food: Where Nutrition Politics and Culture Meet* which is available from the Center for Science in the Public Interest, P.O. Box 7226, Washington, D.C. 20044, for $4.50.

HELP #4

NUTRITIONAL REQUIREMENTS FOR NORMAL AND PREGNANT WOMEN

AGE:	11-14	15-18	19-22	23-50	51+	Pregnant	Lactating
Calories	2400	2100	2100	2100	1800	+300	+500
Protein (in grams)	46	46	44	44	44	+30	+20
Calcium (in milligrams)	1200	1200	800	800	800	+400	+400
Iron (in milligrams)	18	18	18	18	10	*	*
Vitamin A (retinal equivalent)	800	800	800	800	800	+200	+400
Thiamine (in milligrams)	1.1	1.1	1.1	1.0	1.0	+0.4	+0.5
Riboflavin (in milligrams)	1.3	1.3	1.3	1.2	1.2	+0.3	+0.5
Niacin (niacin equivalents)	15	14	14	13	13	+2	+5
Ascorbic acid (in milligrams) (Vitamin C)	50	60	60	60	60	+20	+40
Vitamin D (in micrograms)	10	10	7.5	5	5	+5	+5
Vitamin E (in tocopherol equivalents)	8	8	8	8	8	+2	+3

* The increased requirement during pregnancy cannot be met by the iron content of habitual American diets nor by the existing iron stores of many women; therefore, the use of 30-60 mg. of supplemental iron is recommended. Iron needs during lactation are not subsantially different from those of non-pregnant women, but continued supplementation of the mother for 2-3 months after parturition is advisable in order to replenish stores depleted by pregnancy.

Information taken from the Revised Recommended Dietary Allowances (1979)

A CHEMICAL FEAST - FOOD ADDITIVES
or
TAKE IT OUT. TAKE IT ALL OUT?

Business
Home Economics
Science
Social Studies

January

Objective: The student will become more aware of the additives commonly found in food and better able to decide which are beneficial and which might be harmful.

To The Teacher:

The process of food preparation today has gone far beyond merely preserving it by canning, salting, drying, etc., as was done in our Grandmother's day. Man has added chemicals of all kinds to our foods for a variety of purposes. Some of these additives, like vitamins and minerals, make the food more nutritious. Others, like flavorings and colorings, make the food more appealing. Some additives act merely as "fillers" to increase the bulk of a food, but add nothing to its nutritive value. Sometimes the addition of chemicals has been shown to be harmful and has been subsequently banned. The use of additives has become widespread - and very controversial - in 20th century America.

Activities:

1. Share the information sheet "Terms, History, and Law" with your class. (HELP #1)*

2. Have a packaged food container available for each student to examine and write down all the additives (non-food ingredients) listed on the container. Look up each additive on the chart "Common Food Additives" (HELP #2)* or in the Consumer's Fact Book of Food Additives or another resource book and write down its function. Try to determine what would happen to the food without that additive.

3. Plan a fruit tasting party. Choose a fruit that is available in several forms - fresh, canned, frozen and dried. Read the labels and discuss the additives used. Do they enhance the flavor? Change the flavor? Affect the color? Which would you prefer if fresh fruit was not available?

4. Share the information on* "Color Additives, Nitrates and Saccharin Ban" (HELP #3) with your class. How did these bans affect the various segments of the food industry?

5. Besides the additives that are put in our foods intentionally, there are also additives that have caused great concern lately. These are contaminants - materials unintentionally introduced into food. Foods can become contaminated in many ways - through the growth and harvesting process, and/or packaging and storing. Most of these impurities are small and pose no threat to humans. One obvious exception is the contamination from pesticides. Use of pesticides has greatly increased the farmers' harvest, but they must be removed from the produce before consumption. The problem of controls has not yet been solved. Using DDT as an example of a valuable, but controversial, pesticide, see what evidence and expert opinion can be found on both sides of this debate.

6. Share article "Why FDA Bans Harmful Substances" (HELP #4) with class. Discuss.

SOURCES:

*Energy, Food and You curriculum guide, program of the Washington State Offices of Environmental Education (N.W. Section) and Health Education

Food Additives. Developed by Bethune School District R-5, East Central BOCS. Developed with NET Program Funds.

"Why FDA Bans Harmful Substances", FDA Consumer, December 1978-January 1979, p. 7-9.

TERMS, HISTORY, AND LAW

Food Additives: "Substance or mixture of substances other than a basic foodstuff which is present in a food as a result of any aspect of production, processing, storage, or packaging.

Intentional: Prevent spoilage, improve nutritive value, enhance flavor, stabilize, thicken.

Incidental: No function, pesticide residues, substances that migrate.

Delaney Clause: Provision which prohibits the use of any food additive found to induce cancer when ingested by man or animal, or if its found after tests which are appropriate for the evaluation of the safety of food additives to induce cancer in man or animals.

GRAS List: Phrase "generally recognized as safe." This term is used in the law to provide that substances so considered are not "food additives" and therefore need no clearances as "food additives." This list is currently reviewing the safety of all of these substances that the FDA now agrees may be considered GRAS, except those foods of biological origin consumed for their nutrient properties. These lists of substances already recognized in 1958 as suitable for food by publication in FDA Food Standards, by publication in certain state regulations, and lists of substances known to have been used in food for some years without reported adverse effects. As provided for by the law, some substances could be considered generally recognized as safe merely because of a history of use in food. Food additives are over 100 years old. They began when the first meat was smoked, first fish salted. Additives, then, were used to flavor food and to preserve food in which salt and pepper were taken for granted as safe.

TERMS:

Intentional food additives are substances purposely put into a food to give it some desirable characteristic: color, flavor, texture, stability, or to retard spoilage. Some additives are nutrients which are added to foods to increase their nutritional value, such as vitamin C added to fruit drinks or potassium iodide added to salt.

Flavoring agents such as ginger and cinnamon are additives, as well as substances which themselves do not add flavor but bring out the flavor of other ingredients, for example, monosodium glutamate (MSG).

Antioxidants are used to prevent rancidity of fats during storage and antimyotic agents are used to prevent or control spoilage organisms such as mold, bacteria, and yeast; among the most common of the latter additives are salt and sugar.

Emulsifiers are used to keep oil dispersed in a water medium, such as in salad dressings.

Stabilizers are used to keep the texture of a product smooth and stable, for instance, keeping the water in ice cream from forming ice crystals and destroying the smoothness of the ice cream.

Coloring compounds are used to make the product more attractive to the eye. Earlier, these compounds were natural substances, such as beet juice, but today more than 90 percent are synthetic; they are among the most controversial of the additives.

There are also many other classes of food additives designed to perform various functions in the processing and manufacturing of foods and food products.

The Food Additives Amendment of 1958 requires food processors who want to add a substance to a food to submit a petition to the FDA regarding the "chemistry, use, function and safety" of the proposed additive. When the Amendment was passed, many items were exempt from the procedure because there were no hazards known at the time. They were put on the "GRAS" list. The Delaney Clause of the Amendment states that "no additive shall be deemed safe if it is found to induce cancer when ingested by man or animal.

Source: Whitney & Hamilton, Understanding Nutrition.

* This material borrowed from the Energy, Food, and You curriculum guide, a program of the Washington State Office of Environmental Education (N.W. Section) and Health Education.

COMMON FOOD ADDITIVES

HELP #2

CHEMICAL	SOURCES	FOODS IN WHICH USED	FUNCTION
Adipic acid	synthetic	gelatin desserts	flavor
Amino acids	natural & synthetic	breads, cereals	nutrition supplement
Butylated hydroxyanisole (BHA)	synthetic	pastries, crackers, potato chips	antioxidant
Butylated hydroxytoluene (BHT)	synthetic	cereals, nuts, soup mixes	antioxidant
Calcium propionate Sodium propionate	synthetic	baked goods	mold inhibitor
Calcium silicate	natural	powders & crystalline substances, baking powder	anticaking agent
Carageenan	natural (from plants) & synthetic	liquid diet foods, cottage cheese	stabilizer, thickener
Citric Acid	natural from citrus fruits & synthetic	candies, soft drinks, jams, gelatin desserts	flavor
EDTA (ethylenediamine tetra acetic acid)	synthetic	margarine, cheeses, salad dressings	sequestrant (prevents rancidity by combining with metallic catalysts of oxidation)
Gelatin	natural (from bones) & synthetic	icings, flavored milk, cheese spreads	stabilizer, thickener
Guar gum, Gum arabic	natural & synthetic	instant breakfast drinks, syrups, gravies	stabilizer, thickner
Lecithin	natural (from egg yolk & soybeans)	salad dressings, ice cream, cakes	emulsifier
Maltol	synthetic	soft drinks, jams, gelatin desserts	flavor intensifier
Methyl salicylate	synthetic	grape, mint and nut flavors	flavors
Mono and di-glycerides	synthetic	shortenings, ice cream, baked goods	anti-staling agents, emulsifiers
Monocalcium phosphate	natural	baked goods	leavening agent
Monosodium glutamate	synthetic	prepared meats, fish, soup mixes, canned foods, cheese spreads	flavor intensifier
Phosphoric acid	natural & synthetic	candies, soft drinks, jams, gelatin desserts	flavor
Polysorbates	synthetic	sherbet, soft drinks	emulsifier
Potassium Iodide	natural	table salt	nutrition supplement
Propylene glycol monostearate	synthetic	whipped toppings, ice cream, salad dressings, candy, frosting, cakes	emulsifier
Saccharin	synthetic	low-calorie foods	artificial sweetner
Sodium aluminum phosphate	natural	baked goods	leavening agent
Sodium sulfite	synthetic	sliced apples, potatoes, fruits & vegetables	anti-browning agent
Sorbic acid, potassium sorbate	synthetic	cheese, chocolate, syrups, jellies, cakes, dried fruits	mold inhibitor
Sorbitan monostearate	synthetic	baked goods, salad dressings, ice cream	emulsifier
Tocopherols	natural from vegetable oils	cereals, butter, fats, meat products, potato chips	antioxidant
Vitamins	natural & synthetic	butter, milk, breads, flours, juices, cereals, macaroni products	nutritional supplement

This material borrowed from the *Energy, Food, and You* curriculum guide, a program of the Washington State Offices of Environmental Education (N.W. Section) and Health Education

COLOR ADDITIVES, NITRATES AND SACCHARIN BAN

Color Additives

Color additives have raised many questions for the consumer. Consumer protection against harmful food colorings begin in 1907 right after the passage of the first Pure Food and Drugs Act. Responsible food processors asked the government to set up a system for chemically testing these colors and certifying them as pure and harmless. This was not required by law, until 1938. With the passage of the strengthened Federal Food, Drug and Cosmetic Act, the voluntary certification system was made compulsory. Every synthetic organic color permitted for use in foods, drugs, or cosmetics had first to be listed by FDA as "harmless and suitable for use," and each batch of synthetic organic color listed for such use had to be chemically tested in FDA labs. A color so tested and then certified was called a "U.S. Certified Color."

In the mid-fifties, new animal testing techniques for colors developed. All the colors were reevaluated, using new techniques. In 1960 the Color Additive Amendments were passed protecting the consumer in three major ways. First, it brought all colors under the jurisdiction of the law. Second, it required reevaluation using new scientific animal tests. (Any color that produces cancer in a test animal is automatically ruled out.) Finally it allowed FDA to control the conditions of safe use for each color including the amount of color used. This same law states that no color can be used if its use promotes deception of the consumer.

Nitrites:

Nitrates (sodium nitrate and potassium nitrate) and nitrites (sodium nitrite and potassium nitrite) are water soluble inorganic salts. They are used to preserve or cure meats, poultry, and fish, and in some cases to impart or fix colors that will improve the marketing acceptance of these foods. The apprehension about the use of nitrates or nitrites is that they may combine with certain amines present in meats, fish, and poultry being processed and form substance called nitrosamines, some of which have been shown to cause cancer in laboratory animals. It hasn't been conclusively established by research so far whether nitrates or nitrites will combine with amines that are present in the human body and form nitrosamines after the food is eaten. There is also concern about possible excessive use of nitrites, which in heavy doses impair the capability of the blood to carry oxygen.

On the otherhand, these chemicals not only prevent ordinary spoilage, but also inhibit growth of Clostridium botulinum, the bacterium that produces botulinal toxin, the most dangerous and deadly food poison. The bacteria that cause botulism grow only in the absence of oxygen and under other ideal growth conditions such as warm temperatures and low acidity. The use of nitrates and nitrites in the preserving process inhibits or prevents this growth. The question is whether certain processed meat, poultry, and fish products could still be made microbiologically safe to eat while retaining the characteristics which give them their identity of the use of nitrates and nitrites if their processing were prohibited. Up to now, according to industry claims, there have been no known safe substances as effective as these to protect the products from contamination by botulinal toxin. "The time has come to assemble the data required to resolve these questions," the FDA statement said.

Saccharin:

"Use of this product may be hazardous to your health. This product contains saccharin which has been determined to cause cancer in laboratory animals." A law passed by Congress late in 1977 requires that this warning appear prominently on all foods containing the artificial sweetener saccharin. FDA proposed its saccharin ban on April 15, 1977, following the completion of a study by the Canadian government which showed that saccharin, when fed to rats, caused bladder tumors. The Canadian results confirmed those from earlier studies, including one conducted by FDA. The law, whose primary purpose was to impose an 18 month moratorium on FDA's proposed ban of saccharin, provides time to study existing evidence, to gather new information, and to consider the impact that a ban would have. FDA is contracting with the National Academy of Sciences to compile current information, in addition, the National Cancer Institute is conducting a nationwide study to determine saccharin's precise role in causing bladder cancer in humans. Many of the consumers who have written FDA have worried that the Canadian rat study involved such high doses of saccharin that the results were unrealistic. Many argued that almost any substance fed in such high doses would cause cancer. Neither of these views are true. The exposure of test animals to high doses is the most valid way science today knows to predict whether a chemical may cause cancer in people. Such tests are both realistic and reliable.

This material borrowed from the Energy, Food and You curriculum guide, program of the Washington State Offices of Environmental Education (N.W. Section) and Health Education.

HELP #4

Why FDA Bans Harmful Substances

The law shields consumers from injury and illness by enjoining FDA to prohibit marketing of foods, drugs, medical devices, and cosmetics if they contain substances that will harm the user, but because of the nature and use of the products covered, qualifying factors enter the picture. FDA must consider the benefit vs. the risk in the case of drugs and similar questions involving some contaminants in food, the unavoidability of some contaminants, and the unconditional legal ban on food additives that cause cancer.

by Emil Corwin

In carrying out its responsibilities to protect consumers from unsafe foods, drugs, and cosmetics, the Food and Drug Administration has taken action under the law to ban or limit the use of many substances which pose risks to the public health.

How are these risks determined? Why are some substances banned outright while others are permitted to remain on the market with restrictions on how they may be used? These questions are being asked more and more as public concern about food and drug safety grows.

FDA actions to ban or limit the use of unsafe substances in foods, drugs, and cosmetics are authorized by the Federal Food, Drug, and Cosmetic Act of 1938. Before 1938, FDA authority was generally limited, under the 1906 Food and Drugs Act, to prohibiting the marketing of adulterated food and known toxic products. Action could not be taken until a product was found to be harmful. The stronger law passed in 1938 permitted FDA to require premarket proof of safety for new drugs. The Food Additives Amendment in 1958 and the Color Additive Amendments in 1960 required the manufacturer to provide proof of safety before a new substance could be added to food. Specifically, the 1938 law and its many amendments:

- Require FDA review and approval of safety and effectiveness data for new human and animal drugs before permitting them on the market. A firm wanting to market a new human drug must test it, first in animals and then people, and submit the test data to FDA to obtain marketing approval.

Emil Corwin is a press officer with FDA's Office of Public Affairs.

- Require FDA review and approval of safety and function data before a new food or color additive can be used, or a previously approved additive can be used in a new way. A manufacturer wanting to use a new food or color additive must first test it in animals and then submit the test data to FDA to show that the additive is safe for its proposed use. If there is evidence that an additive already approved for use is hazardous, FDA can withdraw approval or place restrictions on use of the substance. A product containing an unapproved or improperly used food or color additive is considered adulterated and is subject to FDA regulatory action.
- Require FDA to prohibit the use of any food or color additive if it is found to induce cancer in man or animals. This is the Delaney Clause, which is named after the member of Congress who sponsored it. Although this anticancer provision was written into the food additives law 20 years ago and has generated much recent attention, it has been invoked only a few times, for Flectol H and chloroanaline (two indirect food additives used as food packaging adhesives), saccharin, diethylstilbestrol (DES), as used as a growth promotant in cattle and sheep, and nitrofurazone, an antibacterial drug used in chickens, turkeys, and swine to fight disease and promote growth.
- Prohibit the addition of poisonous or deleterious substances to food. If such substances occur in food unavoidably or are required in production, FDA may set limits on the amount permitted in marketed products.
- Prohibit marketing of a food if it contains residues of any pesticide or new animal drug occurring in the food at levels higher than the limitations set by regulation or if it contains the residues of any pesticide that has been banned.
- Permit FDA to prohibit marketing of cosmetics that are found to be harmful in actual use. The law does not require premarket testing or approval of cosmetics for safety.

Drug safety policy is based on a consideration of the benefit-risk factor, that is, whether in the opinion of qualified scientists the potential benefits of using a drug outweigh the risks involved. All drugs are toxic to the human body in some dose and are capable of causing ill effects. The problem is where to draw the line.

The benefit-risk factor is not a direct consideration in the regulation of substances added to food because Congress, at the prodding of industry, made clear in enacting the Food Additives Amendment that benefits are not to be considered. The industry feared FDA would refuse to approve any new food additives which provided little benefit over the ones already on the market.

One of the most difficult problems in assessing the safety of any substance is its long-range effects on human health. Scientists know that exposure to even small amounts of certain substances over a long period of time can produce adverse health effects. The issue of low-level exposure is especially complex and controversial when it comes to substances that cause cancer. Because of the nature of cancer, scientists are unable to say with certainty that there is a safe level of exposure—no matter how small—to a cancer-causing substance. Any exposure to such a substance is presumed to involve some risk.

Another difficult issue in the regulation of food is unavoidable contaminants. Some potentially harmful substances that get into food can't be completely eliminated or avoided. Aflatoxin, for example, is a cancer-causing mold that under certain conditions grows on peanuts and various grains. The mold can be controlled to an extent but not eliminated. For aflatoxins and certain other contaminants that cannot be completely eliminated from the food supply, FDA has established maximum allowable levels or "action levels" and "tolerances." Products containing contaminants above FDA action levels and tolerances are subject to regulatory action as adulterated.

Tolerances also have been established on the amount of pesticide residues permitted in food. The levels are set by the Environmental Protection Agency and enforced by FDA.

Following is a partial list of substances which FDA has banned or limited in foods, drugs, and cosmetics.

Food Additivies

Calamus oil or extract—A flavoring compound. Caused cancer in test animals. Prohibited.

Dulcin & P—4000—Synthetic sweeteners. Toxic to test animals, suspected carcinogen. Prohibited.

Coumarin—Synthetic flavoring. Toxic to test animals. Prohibited.

Cyclamate—Synthetic sweetener. Suspected carcinogen. Prohibited.

Safrole—Flavoring compound. Caused cancer in test animals. Prohibited.

Monochloracetic acid—Synthetic preservative in beverages. Toxic. Prohibited.

Thiourea—An antibacterial chemical for dipping citrus products. Caused cancer in test animals. Prohibited.

Cobaltous salts—Chemicals once used as foam stabilizer in beer. No proof of safety. Prohibited.

NDGA (nordihydroguaiaretic acid)—An antioxidant in food. Produces kidney lesions in test animals. Prohibited.

DEPC (diethylpyrocarbonate)—A synthetic chemcial once used as a ferment inhibitor in beverages. Could combine with other food ingredients to produce a carcinogen. Prohibited.

Flectol H—Food packaging adhesive. Caused cancer in test animals. (The ban of this substance in April 1967 marked the first time that FDA formally invoked the Delaney Clause of the Food Additives Amendment.)

Chloroanaline—Food packaging adhesive. Caused cancer in test animals. Prohibited.

Methylenebis—Food packaging adhesive. Caused cancer in test animals. Prohibited.

Mercaptoimididazoline—Synthetic chemical used in production of rubber articles that may come in contact with food. Could combine with other substances to form a carcinogen. Prohibited.

Acrylonitrile—Plastic used in making beverage containers. No proof of safety. Prohibited.

Chlorofluorocarbons—Solvent to make adhesives and resins in food packaging. Depletes stratospheric ozone. Prohibited.

Trichloroethylene (TCE)—Decaffeinating agent in coffee. Carcinogen. Ban proposed.

Saccharin—Synthetic sweetener. Caused cancer in test animals. Ban from food and beverages proposed, to be effective May 23, 1979.

Color Additives

FD&C Red No. 4—Prohibited for use in foods and ingested drugs and cosmetics. Data inadequate to establish safe conditions of use.

FD&C Red No. 2—Prohibited for use in foods, drugs, and cosmetics. No proof of safety.

FD&C Violet No. 1—Prohibited for use in foods, drugs, and cosmetics. Carcinogen.

D&C Blue No. 6—Prohibited for general drug and cosmetic use. Unresolved questions concerning the chemistry of unidentified components.

D&C Red Nos. 10, 11, 12, and 13—Prohibited for use in drugs and cosmetics. Colors could contain carcinogens.

Ext. D&C Green No. 1—Prohibited for use in externally applied drugs and cosmetics. No proof of safety.

Ext. D&C Yellow No. 1—Prohibited for use in externally applied drugs and cosmetics. Could contain carcinogens.

Ext. D&C Yellows Nos. 9 and 10—Prohibited for use in externally applied drugs and cosmetics. Could contain carcinogens.

Graphite—Prohibited for use in cosmetics. Might contain polynuclear aromatic hydrocarbons, some of which could be carcinogenic.

Bismuth citrate—Prohibited for use as a hair color. Lack of adequate data on toxicity.

Carbon black—Prohibited for use in foods, drugs, and cosmetics. No proof of safety.

Orange B—Caused cancer in test animals. Ban proposed.

Cosmetics

In addition to the colors listed above, FDA also has prohibited or limited the use of the following ingredients in cosmetic products.

Bithionol—Prohibited. Previously used as an antibacterial agent in some shampoos, creams, and lotions and in products to hide blemishes. Caused allergies.

Mercury compounds—Prohibited except in products intended for use in eye area, where it may be used as a preservative. Toxic and may be absorbed through the skin.

Vinyl chloride—Prohibited. Previously used as an ingredient in some aerosol cosmetics. Caused cancer in test animals and among workers exposed to the substance.

Halogenated salicylanilides—Prohibited. Previously used as antimicrobial agents. Caused allergies.

Chloroform—Prohibited. Previously used for flavoring toothpastes. Caused cancer in test animals.

Zirconium complexes—Prohibited in aerosols. Previously used in aerosol antiperspirants and deodorants. Caused granulomas on human skin and produced toxic effects in laboratory animals.

Chlorofluorocarbons—Prohibited. Previously used as a propellant in aerosol cosmetic products. Deplete stratospheric ozone. Ban becomes effective April 15, 1979.

Drugs

Among drugs that FDA has prohibited or restricted for failure to meet requirements of safety or efficacy are the following:

Phenformin—A diabetic drug banned because of evidence it can cause lactic acidosis, a sometimes fatal side effect. It was removed from the market in 1978 under the "imminent hazard" clause of the Food, Drug, and Cosmetic Act—the only time this clause has been used since it was written into the law in 1962.

Methapyrilene—A common ingredient of antihistamines which FDA has proposed to remove from the market because of its tendency to combine with nitrite to cause cancer in test animals.

Trichloroethylene (TCE)—A painkiller and anesthetic prohibited because of evidence it caused cancer in test animals.

Megestrol—A contraceptive drug banned as a carcinogenic hazard.

Dipyrone—A fever reducer taken off the market because it can cause a sometimes fatal blood disease.

Hexachlorophene (HCP)—An antibacterial agent restricted to use as a surgical scrub and handwash product for health care personnel. Previously used as an ingredient in over-the-counter drug products including soaps, feminine hygiene spray, skin cleansers, deodorants. Restricted because of evidence that it could be harmful, especially to infants, when used for routine cleansing.

Diethylstilbestrol (DES)—Used as a growth promotant in cattle and sheep. Ban proposed.

Nitrofurazone—Banned for use in chickens, turkeys, and swine to fight disease and promote growth.

Food Contaminants

FDA has established action levels for poisonous or deleterious substances in human food or animal feed. The levels represent the limit at or above which FDA will act to remove the product from the market. Following is a partial list of substances for which action levels have been established, the commodities in which these substances may appear, and the action level for each substance expressed in parts per million (ppm) or parts per billion (ppb):

Substance	Commodity	Action Level
Aflatoxin	Peanuts and peanut products, grain products, animal feed	20.0 ppb
	Milk	0.5 ppb
Aldrin and Dieldrin	Eggs, animal feed	0.03 ppm
	Blackberries, blueberries	0.05 ppm
	Butter, fish (smoked, frozen, canned), milk	0.3 ppm
Endrin	Apples, apricots, grapes, citrus fruits	0.05 ppm
	Eggs	0.03 ppm
	Milk, vegetable oils, fats	0.03 ppm
Kepone	Crabs (frozen or canned)	0.4 ppm
	Fish, oysters, clams, mussels (smoked, frozen, canned)	0.3 ppm
Lead	Evaporated milk	0.5 ppm
Mercury	Fish, oysters, clams, mussels	1.0 ppm
	Wheat	1.0 ppm
Mirex	Fish	0.1 ppm
Polybrominated Biphenyls (PBB's)	Milk and dairy products, meat, eggs, animal feed	0.3 ppm
Polychlorinated Biphenyls (PCB's)	Paper food-packaging material intended for or used with human food, animal feed	10.0 ppm
	Milk and dairy products	1.5 ppm
	Poultry	3.0 ppm
	Eggs	0.3 ppm
	Fish	2.0 ppm

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LABELS TELL IT LIKE IT IS!
or
It's All Wrapped Up!

Art
Consumerism
Home Economics
Social Studies

February

Objective: The student will become aware of the information available on the label of a food container. He will be able to utilize this information by applying sound nutritional principles in dietary selections.

To The Teacher:

In February we are reminded of the statement attributed to George Washington - "I cannot tell a lie!" The Federal Food, Drug and Cosmetic Act sets the rules for labeling foods, drugs and cosmetics that move from one state to another or are imported into the United States. Those labels can't lie either! We are protected and guided in our purchasing by the requirement of truthful labeling.

Activities:

1. Give pretest to class. (HELP #1)
2. Go over the article "A Consumer's Guide to Food Labels" (HELP #2) with your class and make lists of required information, optional information, and "it would be nice to know" information.
3. Design a label for a food of your choice giving all necessary information, plus any other you feel desirable. Discuss what makes a container attractive to a potential buyer. Will your product be for children or adults? (or both?) How will this affect the packaging? Exchange labels. Evaluate.
4. The teacher will bring a food item for each student. The student will then complete the form "Discovering Labels" (HELP #3). Have the student circle the necessary label information.
5. Have students complete the sheet "Ingredients" (HELP #4). After completion, discuss answers.
6. Examine labels from several brands of similar products, including a generic label if possible. Compare information given on the labels. Is one label more attractive than another? Does the price affect the appeal of the label?
7. Supermarket Scavenger Hunt (HELP #5).

SOURCES:

Morrison, Margaret, "A Consumer's Guide to Food Labels". FDA Consumer, June 1977.

Nutrition Labeling. Developed by Nancy Glaim. East Central Board of Cooperative Services. Developed with NET Program Funds.

Nutrition Unit developed by Limon School District RE-4J. East Central Board of Cooperative Services. Developed with NET Program Funds.

HELP #1

PRETEST

Place a T in front of the statements that are true and an F in front of the statements that are false.

___ Nutrition labeling makes nutrition information available to everyone who wants to use it.

___ The US RDA is listed in cupfuls.

___ The nutrition label shows percentages of the US RDA.

___ The nutrition information panel tells how many servings or portions are in the container.

___ The nutrition label lists the types of fats that are good for you.

___ Calories per serving must be shown on the nutrition information label.

___ Nutrition labeling forces everyone to eat things that are good for them.

___ Nutrition information can help you shop for more nutritious food and plan more nutritionally balanced meals for you and your family.

___ The only foods not required to list all ingredients are standardized foods.

___ The grade of the product must appear on the label.

___ The US RDA is the same for all individuals.

Matching:

_____ FDA
_____ Gras LIST
_____ Enriched
_____ Fortified
_____ Imitation
_____ Additives
_____ US RDA

a. a list of foods found to cause cancer.
b. Federal Dietary Allowance
c. food generally recognized as safe.
d. preservatives
e. Food and Drug Administration
f. a product similar to an existing one.
g. specific nutrients added to milk.
h. a list of amounts of 19 vitamins and minerals suggested for daily consumption.
i. specific nutrients added to bread, flour, etc.

Circle the foods which have a standard of identity:

salad dressing
cereal
instant pudding
condensed soup

jam
asparagus
candy
catsup

evaporated milk
pie filling
spaghetti
bread

ANSWER KEY

True or False:

T
F
T
T
F
T
F
F
T
T
F
F

Matching:

e
c
i
g
f
d
h

Circle:

Salad dressing
jam
evaporated milk
condensed soup
catsup

HELP #2

A Consumer's Guide to Food Labels

by Margaret Morrison

Food labels provide a great deal of information that can help consumers find out more about what they're getting in the products they buy. Some of this information is required by FDA to be shown on the label; some is included on the label at the option of the manufacturer or processor. Some of the information on food labels may be in the form of symbols or codes or dates.

Here's a rundown of the information most often found on food labels along with a brief explanation of what it means.

BASIC INFORMATION

Certain information must be on all food labels:

- The name of the product.
- The net contents or net weight. The net weight on canned food includes the liquid in which the product is packed, such as water in canned vegetables and syrup in canned fruit.
- The name and place of business of the manufacturer, packer, or distributor.

List of Ingredients

On most foods, the ingredients must be listed on the label. The ingredient present in the largest amount, by weight, must be listed first, followed in descending order of weight by the other ingredients. Any additives used in the product must be listed, but colors and flavors do not have to be listed by name. The list of ingredients may simply say "artificial color" or "artificial flavor" or "natural flavor." If the flavors are artificial, this fact must be stated. Butter, cheese, and ice cream, however, are not required to state the presence of artificial color.

The only foods not required to list all ingredients are so-called standardized foods. FDA has set "standards of identity" for some foods. These standards require that all foods called by a particular name (such as catsup or mayonnaise) contain certain mandatory ingredients. Under the law, the mandatory ingredients in standardized foods need not be listed on the label. Manufacturers may add optional ingredients, however, and FDA is revising the food standards regulations to require that optional ingredients in standardized foods be listed on the product label.

NUTRITION INFORMATION

Under FDA regulations, any food to which a nutrient has been added, or any food for which a nutritional claim is made, must have the nutritional content listed on the label. In addition, many manufacturers put nutrition information on products when not required to do so.

Nutrition labels tell you how many calories and how much protein, carbohydrate, and fat are in a serving of the product. They also tell the percentage of the U.S. Recommended Daily Allowances (U.S. RDA's) of protein and seven important vitamins and minerals that each serving of the product contains. Nutrition information can help you shop for more nutritious food and plan more nutritionally balanced meals for you and your family.

How to Read Nutrition Labels

Nutrition information is given on a per serving basis. The label tells the size of a serving (for example: one cup, two ounces, 1 tablespoon), the number of servings in the container, the number of calories per serving, and the amounts in grams of protein, carbohydrate, and fat per serving.

Protein is listed twice on the label: in grams and as a percentage of the U.S. Recommended Daily Allowance.

Seven vitamins and minerals must be shown, in a specific order. The listing of 12 other vitamins and minerals, and of cholesterol, fatty acid, and sodium content is optional.

What U.S. RDA Means

The U.S. Recommended Daily Allowances (U.S. RDA's) are the approximate amounts of protein, vitamins, and minerals that an adult should eat every day to keep healthy. Nutrition labels list the U.S. RDA by percentage. For example, the label may state that one serving of the food contains 35 percent of the Recommended Daily Allowance of vitamin A and 25 percent of the Recommended Daily Allowance of iron. The total amount of food an individual eats in a day should supply the U.S. Recommended Daily Allowance of all essential nutrients.

A Key to Metric Units

Nutrition labels show amounts in grams rather than ounces, because grams are smaller units of measurement and many food components are present in very small amounts. Here is a guide to help you read nutrition labels:

1 pound (lb.) = 454 grams (g)
1 ounce (oz.) = 28 grams (g)
1 gram (g) = 1,000 milligrams (mg)
1 milligram (mg) = 1,000 micrograms (mcg)

A. The name of the product must be on all food labels.

B. The net contents or net weight must be on all food labels.

C. The name and place of business of the manufacturer, packer or distributor must be on all food labels.

D. On most foods, the ingredients must be listed on the label.

E. Some food products carry a grade on the label.

F. To help consumers obtain fresh and wholesome food, many manufacturers open date their product.

G. Many companies use code dating on products that have a long "shelf life."

H. Many food labels now include a small block of parallel lines of various widths with accompanying numbers for computerized check-outs and inventories.

I The symbol "®" on a label signifies that the trademark used on the label is registered with the U.S. Patent Office.

Nutrition Quality

Many foods today are manufactured into products that are different from traditional foods. Some classes of these foods include frozen dinners; breakfast cereals; meal replacements; noncarbonated breakfast beverages fortified with vitamin C; and main dishes such as macaroni and cheese, pizzas, stews, and casseroles.

FDA is establishing voluntary nutritional guidelines for such foods, so consumers can be assured of getting a proper level and range of nutrients when using them. A product that complies with an FDA nutritional quality guideline may include on its label a statement that it meets the U.S. nutritional quality guideline for that particular class of food.

WHAT "IMITATION" MEANS

Some foods are labeled as "imitations" of other foods. Under an FDA regulation, the word "imitation" must be used on the label when the product is not as nutritious as the product which it resembles and for which it is a substitute. If a product is similar to an existing one, and is just as nutritious, a new name can be given to it rather than calling it "imitation." For example, eggless products which are nutritionally equivalent to eggs have been given names such as Eggbeaters and Scramblers.

COMMON OR USUAL NAME

Some foods may look from the label as though they are one thing and actually be another. To prevent deception of consumers, FDA has ruled that such foods must have a "common or usual" name which gives the consumer accurate information about what is in the package or container.

For example, a beverage that looks like orange juice but actually contains very little orange juice must use a name such as "diluted orange juice drink." The product also may be required to state on the label the percentage of the characterizing ingredient it contains. In this case, the common or usual name might be "diluted orange juice beverage, contains 10 percent orange juice."

A noncarbonated beverage that appears to contain a fruit or vegetable juice but does not contain any juice must state on the label that it contains no fruit or vegetable juice.

Another special labeling requirement concerns packaged foods in which the main ingredient or component of a recipe is not included, as in the case of some "main dishes" or "dinners." On such foods, the common or usual name consists of the following:

- The common name of each ingredient in descending order by weight—for example, "noodles and tomato sauce."
- Identification of the food to be prepared from the package—for example, "for preparation of chicken casserole."
- A statement of ingredients that must be added to complete the recipe—for example, "you must add chicken to complete the recipe."

☆U.S. GOVERNMENT PRINTING OFFICE 1978-260-948/40

FDA Consumer

REPRINTED FROM JUNE 1977

HEW Publication No. (FDA) 77-2083

U.S. DEPARTMENT OF HEALTH,
EDUCATION, AND WELFARE
Public Health Service
Food and Drug Administration
Office of Public Affairs

GRADES

Some food products carry a grade on the label, such as "U.S. Grade A." Grades are set by the U.S. Department of Agriculture, based on the quality levels inherent in a product—its taste, texture, and appearance. U.S. Department of Agriculture grades are not based on nutritional content.

Milk and milk products in most states carry a "Grade A" label. This grade is based on FDA recommended sanitary standards for the production and processing of milk and milk products, which are regulated by the states. The grade is not based on nutritional values. However, FDA has established standards for milk which require certain levels of vitamins A and D when these vitamins are added to milk.

OPEN DATING

To help consumers obtain food that is fresh and wholesome, many manufacturers date their product. Open dating, as this practice often is called, is not regulated by FDA, but the following information may be helpful to you.

Four kinds of open dating are commonly used. To benefit from open dating, the consumer needs to know what kind of dating is used on the individual product and what it means.

Pack Date—This is the day the food was manufactured or processed or packaged. In other words, it tells how old the food is when you buy it. The importance of this information to consumers depends on how quickly the particular food normally spoils. Most canned and packaged foods have a long shelf life when stored under dry cool conditions.

Pull or Sell Date—This is the last date the products should be sold, assuming it has been stored and handled properly. The pull date allows for some storage time in the home refrigerator. Cold cuts, ice cream, milk, and refrigerated fresh dough products are examples of foods with pull dates.

Expiration Date—This is the last date the food should be eaten or used. Baby formula and yeast are examples of products that may carry expiration dates.

Freshness Date—This is similar to the expiration date but may allow for normal home storage. Some bakery products that have a freshness date are sold at a reduced price for a short time after the expiration date.

CODE DATING

Many companies use code dating on products that have a long "shelf life." This is usually for the company's information, rather than for the consumer's benefit. The code gives the manufacturer and the store precise information about where and when the product was packaged, so if a recall should be required for any reason, the product can be identified quickly and withdrawn from the market.

UNIVERSAL PRODUCT CODE

Many food labels now include a small block of parallel lines of various widths, with accompanying numbers. This is the Universal Product Code (UPC). The code on a label is unique to that product. Some stores are equipped with computerized checkout equipment that can read the code and automatically ring up the sale. In addition to making it possible for stores to automate part of their checkout work, the UPC, when used in conjunction with a computer, also can function as an automated inventory system. The computer can tell management how much of a specific item is on hand, how fast it is being sold, and when and how much to order.

SYMBOLS ON FOOD LABELS

The symbol "R" on a label signifies that the trademark used on the label is registered with the U.S. Patent Office.

The symbol "C" indicates that the literary and artistic content of the label is protected against infringement under the copyright laws of the United States. Copies of such labels have been filed with the Copyright Office of the Library of Congress.

The symbol which consists of the letter "U" inside the letter "O" is one whose use is authorized by the Union of Orthodox Jewish Congregations of America, more familiarly known as the Orthodox Union, for use of foods which comply with Jewish dietary laws. Detailed information regarding the significance and use of this symbol may be obtained from the headquarters of that organization at 116 E. 27th St., New York, New York 10016.

The symbol which consists of the letter "K" inside the letter "O" is used to indicate that the food is "Kosher," that is, it complies with the Jewish dietary laws, and its processing has been under the direction of a rabbi.

None of the symbols referred to above are required by, or are under the authority of, any of the Acts enforced by the Food and Drug Administration.

Margaret Morrison is a staff writer with FDA's Office of Public Affairs.

DISCOVERING LABELS

Name of the Product____

What information can you find on the front of the food item you have been given?

What can you find on the back?

Sides?

Top and Bottom?

HELP #4

INGREDIENTS

ICE CREAM-no ingredients listed

VIENNA BREAD-Enriched bleached flour, water, corn syrup, whey, yeast, salt, partially hydrogenated soy oil, calcium sulfate, lecithin, calcium propionate (to retard spoilage) malted barley.

FRITOS-Corn, vegetable oil, with BHA and BHT as preservatives, and salt.

PEPSI-Carbonated water, sugar, caramel color, phosphoric acid, caffeine, citric acid, and natural flavors.

STEWED TOMATOES-Cut tomatoes, tomato juice, sugar, dextrose, salt, dried onions, celery, green peppers, calcium salt, spice.

CORN FLAKES-Milled corn, sugar, salt malt flavoring, sodium ascorbate, Vitamin A palmitate, niacinamide, ascorbic acid, reduced iron, pyrodoxine hydrochloride, thiamin hydrochloride, riboflavin, folic acid and Vitamin B_2. BHA added to preserve product freshness.

1. What did you notice about the first ingredient listed for each item?

2. On the STEWED TOMATOES label why do you think cut tomatoes is listed first and spice is listed last?

3. Why do you suppose ice cream does not list the ingredients?

4. Why do you think Fritos, Corn Flakes, and the Vienna bread have preservatives and the other three do not?

5. Can you name some additives that you know are bad for you if you consume too much?

SUPERMARKET SCAVENGER HUNT

The purpose of this exercise is to require students to do some careful label reading in local supermarkets. The following page has 48 items to find. It can be xeroxed and cut to give each student 12 items. (The number is flexible - you could assign more or less, depending on the size of the class.) Each student would be required to find what the list describes within 24 or 48 hours and bring evidence to class. In no case should students be required to purchase items at a store for the scavenger hunt. They could bring the item from home, purchase it if it is usable in their household, or simply bring written evidence of the item's existence.

The idea of challenging the findings of other persons is important to the scavenger hunt. For example, one item says to "find the brand of hot dogs with the worse ingredient list." This would require the searcher to read the labels on several brands of hot dogs and make a decision as to which is worst. That list should then be copied. Other people with the same item to find might reach another conclusion. Disagreements should be discussed.

HELP #5 (Cont)

Find one food other than a spice that costs more than $5 per pound.

Find two breakfast cereals that do not contain sugar.

Find a food that contains real chocolate — baking chocolate, chocolate chips, candy or syrup are not allowed.

Find an example of multiple pricing.

Find two products that are labelled as "fortified" or enriched."

What is the difference between Mayonnaise and Kraft's "Miracle Whip?"

Find a bread that is not made with enriched flour & contains no additives.

Find the product with an ingredient list the most like non-dairy creamer.

Find some cherry flavored food that contains no cherries.

What company makes Jello and what company is its largest competitor in selling flavored gelatin?

Find a maple syrup that contains maple syrup.

Find a package with nutrition information printed on it.

Find a freshness code dated next year.

In someone's pantry (not at a grocery), find 3 different foods made by the same company.

Find a main dish with water as the main ingredient.

Find the most expensive way to buy corn.

Find some food that contains TVP.

Find two packaged food items that do not list ingredients.

Find one merchandising technique used to encourage shoppers to stay in the store longer.

Find a Universal Product Code.

What is the most commonly found main ingredient in baby foods?

Find a food in which the ingredient list is the most impossible to read. Do not use a food used in the filmstrips.

Find the best brand of frozen fruit pies.

Find the brand of hot dogs with the worst ingredient list.

Find some food that is not enriched, fortified and contains no additives.

Find an example of a tie-in display.

Find the brand of peanut butter with the fewest additives.

What is the main ingredient of a Hostess Twinkie?

Find a cracker that does not contain artificial color or flavor or enriched flour.

Find a food package that is designed to make it look like there is more inside.

Find a food containing Hydrolyzed Vegetable Protein.

Identify the chemical used to give hot dogs a pinkish color.

Find the main ingredient in the chocolate coating on ice cream bars.

Find five different foods that have water as the main ingredient.

Find a candy display aimed at small kids.

Find a product that contains an emulsifier. Name both the food and the emulsifier.

Find a food with the word "creme" in its brand or on the label.

Find the worst frozen dinner.

Find the soup that gives the most food per dollar.

Translate into plain English the ingredient list on Top Job cleaning liquid.

Find a food package with a picture on it that looks better than the contents of the package.

Find one example of the lowest shelf space given to basic foods.

Find one example of prime shelf space given to luxury items.

Find a product that contains a preservative. Name both the food and preservative.

Survey the vending machines in your school. What is the main ingredient sold through them?

Find the price difference between brand name aspirin and store brand aspirin.

Find the best brand of corn beef hash.

Find a pickle that has no chemical additives.

FOOD FADS
OR
"FOOD "FACTS" MAY BE FICTITIOUS"

Consumerism
Health
Home Economics

February

Objective: The student will identify food misconceptions that have been promoted and explain why they are inaccurate.

To The Teacher:

Food faddism is costing Americans millions of dollars a year in spite of the fact that our food supply is unsurpassed in volume, variety and nutritional quality. Many false food ideas are promoted by manufactures of vitamin and mineral products. Four misleading ideas about food are commonly used. These four great myths of nutrition are:

1. All diseases are due to faulty diets.
2. Our basic foods are inferior nutritionally because our soils have become depleted through long use and because chemical fertilizers have "poisoned" the land.
3. Commercial food processing destroys the nutritive value of foods.
4. Most Americans suffer from sub-clinical deficiencies that cause all the vague aches and pains, "that tired feeling" that affects human beings.

These are the foundation of most - if not all - misinformation and quackery perpetrated on the American public.

Nutrition authorities agree that the best way to buy vitamins and minerals is in foods - fruits, vegetables, fish, meat, milk, eggs and whole grain breads and cereal.

Activities:

1. Make a list on board of all the food fads and superstitions that the students have heard of. Give the Nutrition Superstition Quiz (HELP #1).

2. Read and discuss in class "The Confusing World of Health Foods." (HELP #2) Arrange for class to visit a health food store. Compare contents, claims, and cost with comparable food in a supermarket.

3. Divide the class into groups and assign each group one of the current "quick weight loss" diets. They will use their knowledge of the Basic Four to evaluate the diet and report to the class whether it is a fad or a nutritionally balanced diet that promoted good health as well as weight loss. Use the "Guidelines for Evaluating Reduction Diets." (HELP #3) and "Facts and Fallacies of Weight Loss." (HELP #4)

4. S-T-R-E-T-C-H Your Imagination! Imagine that in the year 2030 some of our commonly accepted food ideas will have been proved wrong. Choose one and tell how the misconception was discovered and the effect it had on our eating habits.

SOURCES:

Nutrition Curriculum developed by Garfield School District No. RE-2. Developed with NET Program Funds.

Stephenson, Marilyn "The Confusing World of Health Foods," _FDA Consumer_, July-August 1978.

Weight Control developed by Limon School District RE-4J. East Central Board of Cooperative Services. Developed with NET Program Funds.

Weight Control developed by Shirley Cox, Lincoln County Home Extension Agent.

HELP #1

NUTRITION SUPERSTITION

CHECK THE FOLLOWING STATEMENTS TRUE OR FALSE	TRUE	FALSE
1. Brown eggs have the same food value as white ones.	____	____
2. Blackstrap molasses is a requirement of a good diet.	____	____
3. A carton of yogurt makes a good balanced lunch.	____	____
4. Honey has fewer calories than sugar.	____	____
5. Canned vegetables have little food value.	____	____
6. Gelatin will help prevent brittle, chipped fingernails.	____	____
7. It is safe to refrigerate food in the can after it has been opened.	____	____
8. Toast has fewer calories than bread.	____	____
9. Foods grown on improperly nourished or depleted soils have little nutritive value.	____	____
10. Butter has the same number of calories as margarine.	____	____
11. The nutrients in milk are needed only by children.	____	____
12. Foods supplying fats and carbohydrates are important as sources of energy.	____	____
13. Raw sugar is a better source of energy than refined sugar.	____	____
14. Equal amounts of sugar and starch provide the same calories.	____	____
15. To make certain you are getting adequate nutrients, you should take a vitamin pill or supplement.	____	____
16. Since sugar is a good source of quick energy, some kind of sweet dessert should be included at each meal to give family members vim and vitality.	____	____
17. A person who eats three meals a day has good food habits.	____	____
18. It is incorrect to label any food as fattening because there are no "fattening" foods.	____	____
19. Modern processing removes most of the vitamins and minerals in foods.		
20. Natural, organic fertilizers are not only safer than chemical fertilizers, but produce healthier crops.	____	____

Answer Sheet to Nutrition Superstitions

1. T
2. F
3. F
4. F
5. F
6. F
7. T
8. F
9. F
10. T
11. F
12. T
13. F
14. T
15. F
16. F
17. F
18. T
19. F
20. F

HELP #2

The Confusing World Of Health Foods

"Health," "organic," and "natural" are words that crop up often in ads and promotions for food. But it's almost impossible for consumers to figure out what these words really mean. And the advantages claimed for health foods over conventionally grown and marketed products aren't supported by the facts.

by Marilyn Stephenson

It's probably fair to say that the more people know about food and nutrition the more likely they are to develop eating habits that contribute to good health. Therefore, the growing interest of consumers in the safety and nutritional quality of the American diet is a welcome development. Regrettably, however, much of this interest has been colored by alarmists who state or imply that the American food supply is unsafe or somehow inadequate to meet our nutritional needs.

Advocates of "health," "organic," and "natural" foods—terms for which there is little agreement as to their exact meaning—frequently proclaim that such products are safer and more nutritious than conventionally grown and marketed foods. Although most of these claims are not supported by scientific evidence, it is difficult for the public to evaluate truth from fancy—particularly in regard to use of the term "natural" for everything from whole grain flour or bread to potato chips. Claims or suggestions that certain health foods or diets prevent or cure disease or provide other special health benefits are, for the most part, folklore, and sometimes fabrication.

Almost daily, the public is besieged by claims for new "anti-cancer" foods, "no aging" diets, "no hunger" breads, "new" (nonessential) vitamins, and by endless other quackery. Many consumers do not know that the First Amendment to the Constitution of the United States places some kinds of statements about food and nutrition beyond the reach of Federal regulation through its protection of free speech and free press.

If the label on a food product makes false or misleading claims, FDA can take action on the grounds that the product is mislabeled or misbranded. If false claims are made in ads or in other material directly promoting the product, the Federal Trade Commission may be able to take action.

But the labels on or promotions for fad foods or diets often do not make any direct claims that can be shown to be false. Instead, they refer to a book, a pamphlet, a speech, or a magazine article that has praised the product. Thus, these indirect promotions receive the protection of the First Amendment.

Scientific rebuttal of food and nutrition myths published and perpetuated in faddist literature often is futile. As Dr. Edward H. Rynearson, recently retired from the Mayo Clinic, has said, "Americans love hogwash." We have fables that natural vitamins are superior to synthetic vitamins, that the soil in this country is "all worn out," or that use of organic fertilizers results in better crops than manufactured fertilizers. And we have many minor myths: that organic (fertilized) eggs are nutritiously superior to infertile eggs, raw milk is better than pasteurized, and the like.

The terms "organic," "natural," and "health" are so loosely and often interchangeably used that they are difficult to define—so much so that FDA has taken no position on their use in food labeling. The Federal Trade Commission in its proposed Food Advertising Rule would prohibit use of the words "organic" and "natural" in food advertising because of concern about the ability of consumers to understand the terms in the conflicting and confusing ways they are used. FTC also proposes to prohibit the term "health food" in advertising because it is undefined and may fool consumers into thinking one particular food will provide good health.

One thing all health, organic, and natural food products seem to have in common is that they cost the consumer more than conventional foods. A survey by the U.S. Department of Agriculture indicated that the cost at the supermarket can run twice as much for health foods as for regular foods. The price for comparable foods, and sometimes even for the same food, rises steadily from the regular supermarket shelf to the health food section of the supermarket to the health food store. Expanding health food sections in some major foodstores demonstrate the popularity of these items. In 1974 it was projected that organic food retail sales would reach $3 billion in 1980, a rise from $500 million in 1972.

Use of these foods often is tied to the desire for a simpler, pre-technology lifestyle. But the user is misled if he thinks such foods can maintain health or provide better nutritional quality or safety than conventional foods. There is real cause for concern if consumers, particularly those with limited incomes, distrust the regular food supply and buy expensive health foods.

FDA has not tried to arrive at a legal definition of these terms for food labeling because enforcement would be difficult or impossible, and costly. Organically grown foods, once they are removed from the field, cannot be told from commercially fertilized plants. Plant roots absorb nutrients in inorganic form, regardless of the source, and there is no scientific basis for claiming organic foods are more nutritious than conventional foods. According to Dr. Emil M. Mrak, former chancellor of the University of California at Davis and a world authority on agriculture, scientific experiments conducted for 25 years in Michigan, at Cornell University, and in England have established no differences between organic or health foods and foods treated with manufactured fertilizers.

Differences in the nutrient content of food from plants of the same species depend on their genetic nature, the climate, the nutrients available for growth, and the stage of maturity at which they are harvested. For example, wide variation in the vitamin A content has been found in different varieties of carrots and in Valencia oranges grown in different parts of the country.

One of the alleged advantages of organically grown foods is that no pesticides are used on them and thus the so-called organic products consumers buy are supposedly free of traces or residues of pesticides. But the fact is that many of these foods do contain pesticide residues. Even if no pesticides are used on a particular crop, some chemical residues often remain in the soil for years after the last application of a pesticide on a previous crop. In addition, fresh residues may be deposited from drifting sprays and dusts or from rainfall runoff from nearby farms. Traces of pesticides may be found in both organic and conventional foods, but these residues normally are within Federal tolerance levels, which are set low enough to protect consumers.

Since chemically and organically grown foods do not differ in looks, taste, or chemical analysis, the only way to assure that a product labeled as "organically grown" is truthfully labeled would be to keep watch over the product from planting to harvest to sale, and to check soil and water reports. Such a program, of course, would be prohibitively expensive.

The possibility for fraud is apparent when the consumer doesn't know [illegible] the storekeeper is honest, when the storekeeper can't tell if the distributor is honest, and when the distributor doesn't know if his suppliers are living up to their promises. Because of this and the premimum prices placed on organic foods, it's not surprising that conventional foods at times have been substituted for organic foods. If FDA can identify fraud in the labeling of a natural or organic or health food, it can take action. The Agency also can act if claims are made suggesting that a certain food or combination of foods can be used to treat a disease condition, if the statements are untrue.

It would be inaccurate to imply that all elements of the health food industry engage in shady marketing practices. Some distributors and growers supply affidavits or certificates for foods grown and handled according to "organic and natural" precepts. Many health food operators truly believe in health foods and are sincere in trying to provide consumers the "real" thing.

Reading the labels and trusting in the health food store manager appear to be the best protection for the consumer interested in purchasing these foods. Recently it was reported that a natural food store in California removed all vitamins, which are high profit items, from its shelves. The management had learned that most of a product labeled "Rose Hips Vitamin C from Natural Sources" was synthetic. Unable to confirm that similar practices do not occur in other natural vitamin supplements, the store stopped handling vitamins and suggested that people get them from a pharmacy where the pills aren't labeled as natural and they're cheaper.

That's excellent advice from both a scientific and an economic viewpoint. Vitamins from natural sources have no nutritional superiority over synthetic vitamins, and the Food and Drug Administration prohibits such claims in food labeling.

FDA also prohibits claims of nutritional significance in behalf of para-aminobenzoic acid (PABA), rutin and other bioflavonoids, lecithin, and many other such supplements not essential for human nutrition which are sold in health food stores. The continuing market for an ever-increasing variety of these and other food supplements feeds on various myths promoted in the fad literature.

One practice is to falsely promote a substance as a vitamin. A recent example is pangamic acid, which has falsely been called vitamin B-15. Vitamins are organic substances required in minute amounts in the diet of animals for normal growth, maintenance of health, and reproduction. Each vitamin has a unique function in the body, and inadequate amounts or the absence of a vitamin in the diet produces a specific defiency disease condition. For instance, a deficiency or lack of vitamin C causes scurvy.

For a substance to be established as a legitimate vitamin it must be tested under controlled conditions to prove that its absence in the diet causes abnormal body functioning. All animals need some vitamins but not all known vitamins are needed by all animals. Therefore, testing must also establish that a vitamin is essential in the *human* diet before it can be said to be essential in human nutrition. Pangamic acid is not a vitamin because it is not essential in the diet of animals for the normal functioning of the body.

they're totally safe, or at least safer than conventional foods. There's not much logic here. Hundreds of toxicants are known to occur naturally in foods. For example, aflatoxin, a mold product which grows naturally under some conditions on corn, peanuts, and other grains, is a powerful carcinogen. FDA monitors foods for aflatoxin and has established safe minimum levels in some foods, such as peanut butter and milk. Peanut butter or milk which contains aflatoxin above these safe levels cannot be marketed. But there's no way FDA or anyone can assure that all foods are entirely free of such naturally occurring toxins.

Herb teas, which are favored by many health food advocates, contain thousands of chemical compounds that have not been tested for safety. Sassafras root was found to contain safrole, which produces liver cancer in rats, and the sale of sassafras tea was banned by FDA in 1976 for that reason.

Lead, arsenic, cadmium, and other heavy metals occur naturally at very low levels in many foods. In extracts and concentrates made from foods, the level of such substances may be much higher. Some bonemeal has been found to contain high levels of lead.

Kelp tablets, a food supplement commonly sold in health food stores, may contain high levels of arsenic, as do many other products from the sea. Studies of industrial workers exposed to arsenic indicate a greater occurrence of cancer among those so exposed. Researchers have found elevated levels of urinary arsenic in individuals who have consumed kelp table supplements.

Many commonly used foods, whether sold as health or conventional foods, contain low levels of toxic substances. Oxalic acid is present in several vegetables including spinach. Carrots, lettuce, and celery leaves contain nitrate and nitrite compounds.

Does this mean that we need to be fearful of using these foods? Not at all. The best thing to do is to exercise care and common sense by eating a balanced diet from a wide variety of foods and by practicing moderation in eating any single food.

Marilyn Stephenson is a dietitian and nutritionist with FDA's Bureau of Foods.

GUIDELINES FOR EVALUATING REDUCTION DIETS

1. Is the calorie level below that of energy expenditure but just low enough to allow a weight loss of 1-2 pounds per week? That is, does the diet provide from 500-1000 calories fewer per day than the present calorie need -- but at least 1200?
2. Does the diet contain a varied selection of food, including the recommended amounts of the four food groups: meat, milk, fruits and vegetables, and grains?
3. Is the diet one that will help correct poor food habits because it is based on sound nutritional principles?
4. Can the diet be adjusted to varying life-styles?
5. Is the diet one that a person could stay on for some time? That is, is it one that is realistic and not monotonous?
6. Are there any effects of the diet which may be physiologically harmful?
7. Are there statements included which are not in accord with current medical and nutritional knowledge?
8. Are the words and phrases "magic," "amazing," "no will power needed," "eat all you want," etc. used?
9. Does the diet emphasize one food, one brand of food, or one particular group of foods?
10. Does the diet emphasize a particular adjunct, such as special devices, candies, supplements, bulk formers, etc.?

If the diet under question is an effective and nutritionally sound weight-reducing program, the first five questions will be answered "yes" and the next five questions will be answered "no."

COMMONSENSE WEIGHT CONTROL

Five rules of Thumb

Proposed by Professor Charlotte M. Young for a successful low-calorie, reducing diet.

1. The diet should satisfy all nutritional needs but provide fewer calories than normally consumed.
2. The diet should come as close as possible to your eating habits and tastes.
3. The diet should protect you from between-meal hunger, give you a sense of well-being, and not make you feel tired.
4. The food on your diet should be easy for you to obtain, whether at home or away, without making you feel "different."
5. The diet should be one that, with suitable caloric additions, can be used to maintain your ideal weight once reached.

Young, C.M. "Planning the Low Calorie Diet." Am. Jour. Clinc. Nutr. 8:896 (November-December) 1960

Facts and Fallacies of Weight Loss

There is not a lack of reducing diets! Popular magazines and commercial publications all include "the easy diet" plan. Have you ever stopped to think that if any one of these diets were the real answer, there wouldn't be a need for another!

The only way to lose fat is to take in fewer calories than the body requires to perform its usual functions. There is a difference in losing weight and losing fat. Most people want to lose fat.

Starvation diets can result in a weight loss caused by the body losing fluid. However, when one returns to normal eating habits again, one gains back the fluid and often times more than what you originally had.

The greatest problem for overweight people is probably not to lose weight but in keeping it off! As we have learned already, and it cannot be stressed enough, is, you must change your eating habits to achieve permanent weight loss. It may take longer, but it is well worth it.

It is becoming apparent that a person is maybe better off, healthwise, to remain overweight than to be continually gaining and losing weight. Often times, when a person gains back "lost pounds," that person gains even more. This is why it is so necessary for an individual to commit themselves to a lifetime change and not a few days or weeks of suffering.

Fad Diets

Fad diets often promise magical formulas for quick weight loss. This sometimes produces temporary weight loss of body fluids. Also, the starvation diet also allows for quick weight loss, however, much of it is due to lean body mass, which is highly undesirable.

When judging diet plans, consider the following characteristics:

1. The exclusion of an entire food group from the diet (such as breads, meats, fats, vegetables or fruits and milk and dairy products).
2. A diet containing only a few foods.
3. Written in a manner of "magical effects".
4. The purchase of certain "health foods" or supplements which are for the success of the diet.
5. Claims which declaim the medical profession (using many reasons, such as, what would doctors do for a living if people weren't trying to diet).

Many fad diets are probably not dangerous because people do not seriously contemplate remaining on th "diet" for long periods of time. The harm can happen with long periods of time!

Several of the current "quick weight loss" diets are!

1. Low carbohydrate
2. Starvation
3. Liquid protein
4. Diet claiming no hunger
5. High Fiber Diet
6. Diets depending upon one of a few foods
7. Kelp, lecithin, Vitamin B6, Vinegar diet

8. Diets claiming to prevent aging
9. Extreme vegetarian diets
10. Liquid or formula diets
11. Food supplements
12. "Natural" foods versus processed foods

PROTEIN-MEAT AND BEAN
or
"THE LION, THE LAMB, AND THE SOYBEAN"

Consumerism
Home Economics
Math
Social Studies

March

Objective: The student will realize the importance of protein in his diet.

To The Teacher:

Our bodies are 18-20% protein. Skin, hair, nails, eyes, muscles and enzymes are mostly protein. This element is essential for growth and maintenance of the body and for the formation of antibodies to fight infection.

Protein is made of amino acids linked end to end in long chains. There are twenty primary amino acids and each is linked in a specific order that makes each unique. The body can produce all but eight of these amino acids; these eight must be supplied by food.

Protein foods that contain these eight essential amino acids are called complete protein. Most protein of animal origin - eggs, milk, cheese, poultry and meat and soybean protein are high quality complete protein foods. Protein foods which contain some, but not all eight, are called imcomplete protein and are usually from plant sources. When certain foods are eaten together, they supply complete protein. These are then called complementary proteins. Examples: grains and legumes, legumes and milk, rice and sesame/sunflower seeds.

Activities:

1. Read and discuss with class "Protein" (HELP #1)
2. Make a comparison of the cost and food value of equal weights of tender and less tender cuts of beef.
3. Invite a dietician to speak to the class on Vegetarianism and alternate sources of protein.
4. Students will complete a Four-Day Food Diary (HELP #2). Have the students determine how much vegetable protein they consumed in comparison to animal protein.

5. The weather forecast is for warm sunny weather. The class will have a picnic. A number of the students are vegetarians. Plan the picnic and who will bring what. Try new foods, new recipes. Test out your plans with a real "picnic" in class.

6. "Protein Possibilities" (HELP #3)

7. Read and discuss in class "Eating the Vegetarian Way". (HELP #4)

SOURCES:

Energy, Food and You curriculum guide, a program of the Washington State offices of Environmental Education (N.W. Section) and Health Education.

Katz, Deborah and Goodwin, Mary. Food: Where Nutrition Politics and Culture Meet. Center for Science in the Public Interest. Washington D. C. 1976.

Cobe, Patricia, "Eating the Vegetarian Way", FORECAST for Home Economics, Scholastic Magazines, Inc., February, 1980.

HELP #1

PROTEIN

Protein, an essential nutrient for the body, is made up of a large number of compounds called amino acids. Proteins differ from carbohydrates and fats by containing nitrogen as well as carbon, hydrogen and oxygen.

Plants are able to make their own protein directly from the soil, air and water, whereas humans must get their protein supply from animal and plant sources which must first be broken down during digestion to its simplest form, amino acids. These amino acids are then sent from the small intestine into the bloodstream and eventually to all of the cells.

In the nucleus of the cell, the function of these amino acids is determined by the genetic code. They are eventually grouped into combinations and patterns in order to produce specific proteins. These proteins now make up all the enzymes, hormones and antibodies in the body as well as patterns of amino acids which are used to build and repair tissues.

Function of Protein

Protein is essential for growth, repair and maintenance of body tissue. Protein supplies new tissues when the body heals from wounds or recovers from surgery and burns. New tissue mass develops as muscle mass increases during rigorous athletic training. Hemoglobin, essential for carrying oxygen to the cells and carbon dioxide to the lungs, is composed principlely of protein.

The body's ability to resist disease is maintained in part by antibodies which contain protein.

Protein is important in regulating the water balance of the body (the intercellular and intracellular exchange of fluids across the semipermeable membranes.)

Protein is involved in the clotting of blood. When you cut yourself, the injured blood cells react immediately by releasing a protein which together with other special proteins, forms a fiber that plug the cut and stops the bleeding.

Protein helps develop strong bones and teeth, and provides a protective coating for hair, skin and nails.

Individual and heredity traits and characteristics are carried by the genes in our body, which are partially made of protein.

Protein forms a part of the enzymes and hormones which regulate body processes.

Essential" Amino Acids

If all proteins were the same, there would be no controversy about preferable protein sources for humans. But proteins are not identical. The proteins our bodies use are made of varying combinations of 22 amino acids. Eight of these amino acids cannot be synthesized by the body and must be obtained from our food. These are called essential amino acids (EAA). The relative quantities of EAA in egg protein most nearly match the pattern of EAA needed by our body's cells. In order for the cell's "protein assembly center" to most efficiently utilize the protein we eat, all eight EAA must be eaten simultaneously and in the same proportion as the EAA of egg protein. Many foods contain all of the EAA's, but often there is a disproportionately small amount of one of the EAA's, thus limiting the usefulness of that protein source. This problem can be overcome by eating a variety of protein sources in one meal. The EAA deficiency of one food can be offset by the EAA's contained in another food.

THE EIGHT ESSENTIAL AMINO ACIDS

1. methionine (meh-THIGH-O-neen)
2. threonine (THREE-O-neen)
3. tryptophan (TRIP-toe-fane)
4. isoleucine (eye-so-LOO-seen)
5. leucine (LOO-seen)
6. lysine (LYE-seen)
7. valine (VAY-leen)
8. phenylalanine (fee-nul-AL-uh-neen)

Protein Quality

All sources of protein do not have the same quality. That is, they do not contain all the essential amino acids (complete protein) in the correct proportions (high quality protein).

Complete Protein contains all eight essential amino acids. Complete sources of protein are found in animal products - eggs, meat, fish, poultry, milk and milk products. These foods are also considered high quality sources of protein because their amino acid proportions most nearly equal the amino acids needed by the body. The egg, considered to be the most perfect protein, is designated as the "reference" protein, against which other proteins are measured.

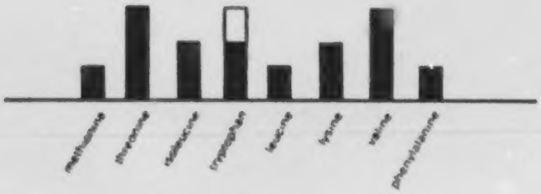
Incomplete Protein does not contain all of the eight essential amino acids, or the essential amino acids are not in the necessary proportions. Generally plant proteins are incomplete and therefore low quality protein. Higher quality protein may be obtained from plants through combining or "complementing" them.

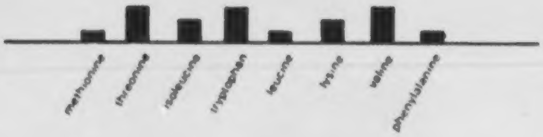
Limiting Amino Acids

The amino acids found in the shortest supply effect the utilization of the rest of the essential amino acids. Tryptophan, lysine and methionine are considered the essential limiting amino acids. If any of these three is in short supply, all the rest of the essential amino acids will be in short supply. Example: "If you eat a protein containing 100 percent of the utilizable pattern's requirement for tryptophan and leucine, but only 50 percent of the necessary lysine, then as far as your body is concerned, you have only eaten 50 percent of all the essential amino acids." Diet For a Small Planet, p. 67.

If your protein source is missing this amount of e.g. trytophan (limiting amino acid).........

Then your protein source becomes this





The protein in the body uses the essential amino acids at the level of the "limiting amino acid" and uses the leftover amino acids for energy.

Combining Protein Sources

Because plant protein is of lower quality, it is important to put together in the right proportions, a combination of plant proteins which will complement (make up for) their amino acid deficiencies and/or be used as a supplement in the diet. You don't have to find out the amino acid pattern of every food in order to compare deficiencies. It is easier to think of groups of foods. Each group has a specific amino acid in greater proportions than in another group of food. By combining two or more groups in the correct proportions, you are able to complement, or remove, the amino acid deficiencies. Example: Grains are low in lysine and high in methionine; whole legumes are the opposite. In a particular proportion, almost any two members of these two families will complement each other adequately.

It is important to remember that the whole diet must be balanced. If we carefully combine our plant proteins, but neglect other sources of nutrients from the rest of the food groups, our diet will not meet all our nutritional needs. Two efficient methods for combining the main groups of protein (grains, legumes, nuts and seeds) are:

1) Complementing Protein - combining plant proteins in the same meal which have mutually complementary amino acid patterns. Such protein mixes do not result in a perfect protein (only eggs are considered perfect) that is fully utilizable by the body, but these combinations can increase the protein quality.

Examples of Complementing Protein

legumes + grains
legumes + nuts and seeds
grains + legumes
grains + nuts and seeds
nuts and seeds + legumes
nuts and seeds + grains

Legumes include - any dried beans (pinto, black, red, white, kidney, soybeans, peanuts, fava, limas)
- any dried peas (chick peas, split peas)
- lentils

grains include - oatmeal, wheat, rye, buckwheat, bulgar, sorghum, millet, barley, cornmeal, rice
seeds include - pumpkin, sunflower, sesame
nuts include - walnuts, pistachios, almonds, cashews, Brazil, filberts, pecans
yeasts include - Brewers, torula, active dry

2) Supplementing Protein - Since animal protein contains all the essential amino acids, combining any animal protein with plant protein will improve the quality of the plant protein. Examples of supplementing protein:

animal products + grains

animal products + nuts and seeds

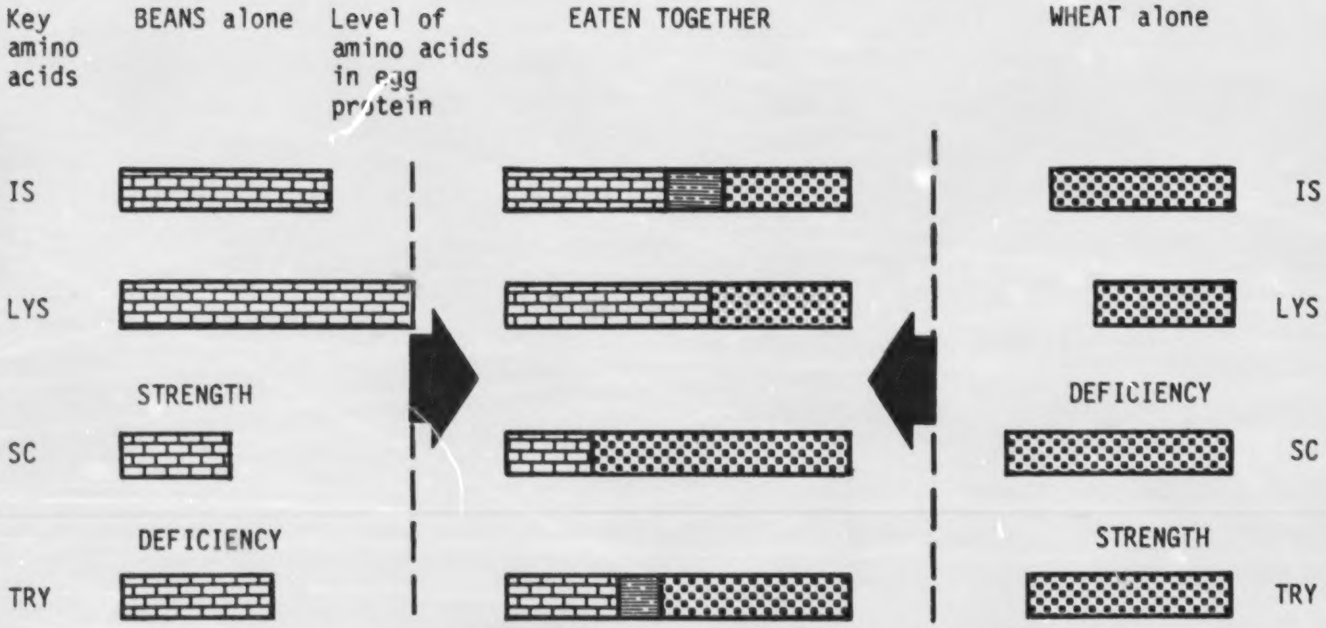
animal products + legumes

Protein Quantity - refers to the amount of food consumed and its protein content. When combining plant proteins, it is important to ensure the required amounts and simultaneous presence of the essential amino acids. Refer to Diet For A Small Planet, and Laurel's Kitchen.

Protein and Athletes

Contrary to what most people think, athletes do not need to significantly increase their intake of protein alone. Naturally, caloric needs increase according to energy expenditure, but this increase requires calories from a variety of foods and not mainly from high protein sources. The primary function of protein is to build and repair body structures, enzymes and hormones. Protein is not normally used as a source of energy. Fats and carbohydrates are the primary energy sources. If an athlete takes in more protein than their body requires, it will be used for energy or converted to fat for storage. Athletes increase their muscle mass with training and conditioning, not just with an increase of protein.

DEMONSTRATING PROTEIN COMPLEMENTARITY


Key amino acids
BEANS alone
Level of amino acids in egg protein
EATEN TOGETHER
WHEAT alone
IS
LYS
STRENGTH
SC
DEFICIENCY
TRY
IS
LYS
DEFICIENCY
SC
STRENGTH
TRY

BEANS + WHEAT = COMPLEMENTARY PROTEIN COMBINATION

Source: Amino Acid Content of Foods and Bological Data on Proteins. Food and Agricultural Organization of the U.N., Rome, 1970.

This material borrowed from the Energy, Food, and You curriculum guide, a program of the Washington State Offices of Environmental Education (N.W. Section) and Health Education.

HELP #2

A FOUR-DAY FOOD DIARY

1. Encourage the students to keep a careful, accurate food diary. The student may wish to compile the results for a class survey. Have the students outline pages as follows, leaving adequate space for all foods consumed.

	TIME	FOOD & AMOUNT	SOURCE	PLACE CONSUMED
Breakfast				
Midmorning				
Lunch				
Afternoon				
Dinner				
After dinner				

2. Have the students record in a four-day diary:
   *types of foods
   *amounts in home measures (1 cup, 1 slice, etc.)
   *source of food (home, vending machines, etc.)
   *where food was consumed (car, park, dinner table)

3. Have the students determine how well they are feeding their bodies by organizing foods and amounts consumed into categories:

   *vegetables *protein foods *sweets *miscellaneous

   *fruits *bread and cereal *crisp fried foods

4. Mixed foods such as cheese pizza may be counted as 1/2 serving protein food, 1/2 serving vegetable, 1 serving bread; stew (1 cup) may be considered as 1/2-1 serving protein, 1-2 servings vegetables, depending on the composition; presweetened cereal may be counted as 1/2 serving cereal, 1/2 serving sweet; a milkshake may be 1/2 serving milk, 1/2 serving sweet, etc.

SOURCE:

Reprinted from Food: Where Nutrition Politics and Culture Meet which is available from the Center for Science in the Public Interest, P. O. Box 7226, Washington, D.C. 20044, for $4.50.

HELP #2 (Cont)

FOOD CONSUMPTION TABULATION SHEET

FOOD	Day 1	Day 2	Day 3	Day 4	Total	Total/4= Average Per Day
Vegetables						
Fruit						
Milk						
Protein Foods						
Cereals & Bread						
Sweets						
Crisp Fried Foods						
Miscellaneous						

Recommended Foods and Servings Per Day:
- Vegetables-Fruits: 4 Servings (citrus, deep, leafy or green, deep yellow, others)
- Cereals & Breads: 4 Servings (preferably whole grain)
- Protein Foods: 2 or more Servings
- Milk: 3 or 4 Servings

More than 2 sweets or empty calorie snacks per day is unsatisfactory.

HELP #2

5. Using Food Consumption Tabulation Sheet, have students record number of servings in each category daily. Total the four days and divide by four to find the average daily consumption for each category.

The following is a list of average servings:

Vegetables-Fruit	1/2 cup or one unit (1 orange)
1 cup Milk, Yogurt	8 oz.
Protein Foods	
1 cup Beans, cooked	8 oz.
Eggs	2
4 tbsp. Peanut Butter	4 oz.
Chicken, Lean Meat, Cooked Fish	2 to 3 oz.
Cheese	2 oz.
Cereal and Bread	
Bread	1 slice
Cereal, Cooked	1/2 to 3/4 cup
Cereal, Dry	1 oz.
Cornmeal, Grits, Rice	1/2 to 3/4 cup

Crisp Fried Foods: 1 oz.

Sweets
2 small cookies
1 cup sweetened drink
1 slice cake
1 doughnut
2 small candies
1/2 cup ice cream

6. Have each student make a personal bar chart of average daily intake for food categories. Have students calculate total milk consumption, soft drink consumption, vegetables and fruit consumption, etc., for the class. Have them prepare a bulletin board using the information.

7. Have the students examine their average food intake to determine:

- Is the diet well-balanced?
- How many unwholesome foods are included?
- Do those with a well-balanced diet also eat an unsatisfactory number of unwholesome foods?

8. Have students grade their average daily record:

- Allow 25 points for 100% of each of the basic four food groups.
- Allow 5 points for each vegetable. Add 2 points if fresh, unprocessed variety.
- Allow 5 points for each fruit; add 2 points if fresh, unprocessed variety.
- Allow 5 points for each protein food. Add 2 points for non-meat protein foods.
- Allow 5 points for each grain or bread. Add 2 points for each whole grain product.
- Subtract 5 points for each food with added sugar.
- Subtract 5 points for each food high in fat (processed meats, baked goods, fried foods and snacks).
- Subtract 5 points for each food containing sodium nitrite (processed or smoked meats).

9. Collect totals for class and have students graph results. Have students determine a good, fair and poor diet in terms of class scores.
DISCUSS: Does the class eat well? Is it a well-nourished group? How could that be determined?

10. Divide the class into groups of 6-8. DISCUSS: How do you feel about the way you eat? Are there certain groups of food you don't eat enough of? How could you increase these foods in your diet? Are you willing to give up empty calorie foods, or substitute foods that will benefit your health? What do you think would be a good way of reducing your intake of empty calorie foods?

HELP #3

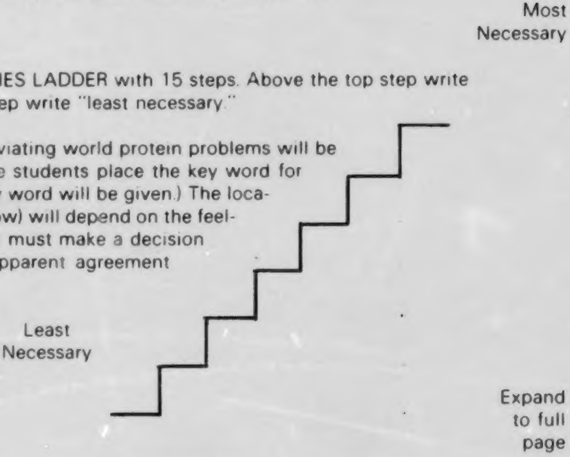
Protein Possibilities

OBJECTIVE: To identify the most feasible means of improving the world food situation.

PROCEDURE:

1. Have students draw a PROTEIN POSSIBILITIES LADDER with 15 steps. Above the top step write "Most necessary" and below the bottom step write "least necessary."

2. Explain that a list of 15 possibilities for alleviating world protein problems will be read. As each alternative is presented, have students place the key word for that possibility on one of the steps. (The key word will be given.) The location of the key word on the ladder (high or low) will depend on the feeling of the student (pro or con). The student must make a decision about each alternative, regardless of an apparent agreement will all, or apathy towards some. The student may change the placement of items on the ladder as new alternatives are presented (by crossing out, drawing arrows, etc.)



3. List of Protein Possibilities

Protein Possibilities Ladder Alternatives and Key Words

- People in developed countries consuming less grain-fed meat and obtaining more of their protein from plant food combinations. (LESS MEAT)
- Sending food to developing nations in crisis situations. (SEND FOOD)
- Contributing money to needy countries to develop and implement better methods of food production. (MONEY)
- An international policy which involves extensive education in population control. (POPULATION)
- Training programs for people in developing countries to use skills and knowledge to modernize agricultural methods. (EDUCATE)
- Sending equipment and fertilizer to needy areas. (EQUIPMENT)
- Increasing research to improve the nutrition and durability of grains. (RESEARCH)
- Independent companies selling cattle, chickens, grains, or other food to developing nations. (SELL FOOD)
- Developing unused land areas (swamps, mountains, deserts). (LAND USE)
- Expanding programs to build roads and warehouses. (BUILD ROADS)
- Increasing use of peanuts and soybeans to make meat analogs. (MEAT ANALOGS)
- Fortifying existing foods with additional protein. (FORTIFY)
- Increasing fish farming. (FISH FARMING)
- Redistributing land ownership to majority of people in developing nations. (LAND OWNERSHIP)
- Allowing desperately starving people in developing nations to die without food assistance while sending food to nations whose people have a better chance of survival. (TRIAGE)

Reprinted from "Protein Power," Massachusetts Department of Education,
Bureau of Nutrition Education and School Services,
Boston, Massachusetts 02111

SOURCE: Reprinted from Food: Where Nutrition Politics and Culture Meet which is available from the Center for Science in the Public Interest, P.O. Box 7226, Washington, D.C. 20044, for $4.50.

EATING THE VEGETARIAN WAY

By Patrica Cobe

It's happening in college dining halls, airplanes, and restaurants across the country—meatless meals are on the menu! In fact, vegetarian eating is no longer considered "special" or "eccentric." Case in point: The director of dining food services for Smith College in Massachusetts reports that vegetarianism is "the most drastic change in student eating habits I have seen in 20 years on the job." And this no-meat approach seems to be more than a passing college fad. The vegetarian lifestyle is becoming more and more popular among people of all ages interested in nutrition and health.

Meatless eating comes in several shapes and forms. Some adherents are simply excluding red meat from their diets, but sticking with fish, eggs, and dairy products. Those who consider themselves *ovo-lacto vegetarians* have eliminated meat, poultry, and fish, but they do mix milk, cheese, and eggs with non-animal foods. *Lacto-vegetarians* have cut out eggs but continue to eat dairy products and plant foods, while *vegans* eat no animal products at all, basing their diets entirely on grains, fruits, vegetables, nuts and seeds. In addition, there is a large segment of the population that is simply decreasing its consumption of red meat in accordance with the U.S. Dietary Goals, using smaller quantities in combination with vegetables and grains.

Nutritionally speaking, there is *no* reason why red meat and other animal foods should not be eaten in *moderate* amounts. These foods are valuable sources of protein, iron, Vitamin B-12, and trace minerals. Unfortunately, many Americans currently consume much larger portions of meat than are necessary for adequate protein intake, and the excess is being stored as fat.

Vegetarians of any type have a variety of reasons for going meatless—health, cost, religion, ecology, and culture can all be factors. Those who opt for vegetarianism can easily meet their needs for most nutrients with a bit of planning and creativity. Lacto-ovo vegetarians will have the easiest time of it; other types might have to augment their diets with a daily vitamin-mineral supplement. Let's see how meatless eaters can choose meals that measure up nutritionally.

PACKING IN THE PROTEIN

Critics of vegetarianism contend that animal foods contain the most protein and meatless diets cannot provide enough of this nutrient to maintain health. How true is this statement? To find out, let's examine the role protein plays in our health.

More than 20% of the human body is made up of protein. This nutrient is necessary for growth, as well as the maintenance of body tissues, muscles, blood, skin, nails, and hair. Without protein, the enzymes, hormones, and antibodies that regulate some of our most vital functions would cease to work.

Protein is composed of 20 building blocks called amino acids. During digestion, the protein in the food we eat is broken down into its components—carbon, oxygen, hydrogen, and nitrogen. The body then draws on this "pool" as raw material for building new proteins required by our cells for growth and repair. In addition to these elements, all the necessary amino acids must be present for the body to manufacture new proteins. While most of these can be synthesized in the body, there are nine amino acids that can be supplied only through the food we eat. These are called the "essential" amino acids, and are supplied in just the right proportions and amounts by animal foods.

Because the protein in animal foods is balanced enough to assure maximum utilization, it is called "high-quality" or "complete" protein. Although many plant foods also contain protein, they are missing one or more of the essential amino acids, and are therefore said to contain "low-quality" or "incomplete" protein.

The term "low-quality" can be very misleading. Luckily, it is entirely possible for a non-meat eater to have a "high-quality" diet by balancing the protein in the foods he or she chooses. In other words, two or more incomplete protein foods, i.e., rice and beans, can be eaten together to "fill-in" the essential amino acids missing in each. This pairing, called "protein complementarity," forms a source of high-quality protein that can be fully utilized by the body.

THE VEGETARIAN EATING PLAN

Protein complementarity is often presented as a complex biochemical process involving the balancing of specific amino acids in certain foods that must be eaten together. However, vegetarians do not have to be biochemists in order to get enough protein to be well-nourished. It is more realistic to balance the *types* of foods eaten in each meal rather than the precise amino acids contained in each food combination. For the non-meat eater, that means following a four-food-groups eating plan similar to that followed by meat-eaters. The food groups designated for the vegetarian, however, are slightly different in composition. Here's how they may look:

MEAT ALTERNATE GROUP	DAILY RECOMMENDED NUMBER OF SERVINGS/AVERAGE GRAMS OF PROTEIN THEY CONTAIN		
	CHILD	**TEEN**	**ADULT**
One equals a serving	**2/20**	**3/30**	**2/20**

1/2 cup cooked soybeans
2/3 cup cooked dry beans, peas, or lentils
2 1/2 tablespoons peanut butter
1/3 cup peanuts or sesame seeds
1/2 cup almonds, cashews, sunflower seeds
2 eggs
11/2 ounces hard cheese
1/2 cup cottage cheese
2 ounces soy-based textured vegetable protein
4 ounces tofu (soybean curd)

MILK GROUP	CHILD	TEEN	ADULT
One equals a serving	3-4/ 24-32	4/32	2/16
1 cup milk or buttermilk 1 cup yogurt 1/2 cup cottage cheese 1 1/2 ounces hard cheese			
FRUIT-VEGETABLE GROUP			
One equals a serving	4/8	4/8	4/8
One piece or 2/3 cup cooked Leafy green and yellow vegetables Citrus fruits, potatoes, tomatoes, etc. Mushrooms, broccoli, peas, spinach, collard greens, asparagus, and cauliflower are particularly good protein sources			
GRAIN GROUP			
One equals a serving	4/8	4/8	4/8
1 slice whole-grain or enriched bread 1/2 cup cooked rice, barley, enriched pasta, or cracked wheat 2/3 cup oatmeal, corn or cornmeal, or enriched ready-to-eat cereal			

Of the foods listed in the chart, only dairy products, eggs, and soybeans contain high-quality protein. When eaten in the right combinations, however, the remaining foods will supply adequate amounts of protein as defined by the current U.S. Recommended Daily Allowances. That means an average of 23-34 grams daily for children ages three to twelve; 45-55 grams for teenagers; 46 grams for female adults; 56 grams for male adults; 76 grams for pregnant women; and 66 grams for nursing women.

MIXING AND MATCHING FOR TOP NUTRITION

You and your students should find it simple to combine complementary protein foods once you realize that a hunk of meat needn't be the focus of every meal. After all, it's a natural way to eat in many cultures. The Mexicans have been putting together beans and corn for centuries; the Italians whip up fantastic pasta and cheese dishes; and the Chinese stir-fry tofu with vegetables and serve it over rice. These combinations of grains, legumes, eggs, dairy products, and/or vegetables naturally form a usable pattern of amino acids. Here are some other foods that strengthen each other in the same way: ● peanut butter sandwich on whole-wheat bread ● macaroni and cheese ● pizza ● yams and pinto beans ● rice and black beans ● lentil stew on rice with yogurt● refried beans rolled in a corn tortilla ● garbanzo bean-sesame seed spread (hummus) ● oatmeal and milk ● minestrone soup (containing pasta, beans, vegetables) ● split-pea soup with soy protein bits.

In order to make their protein more valuable, each of these dishes should be incorporated into a well-rounded menu. For example, the tortilla with refried beans can be accompanied by a garnish of shredded cheddar cheese, rice, and a green salad with yogurt dressing; the split pea soup enhanced by a corn muffin, a chunk of Swiss cheese, and rice pudding for dessert; the oatmeal served for breakfast with cantaloupe filled with cottage cheese and a slice of toast. Have your students compose more sample vegetarian menus using the items in the list above as focal points for each meal.

In cooking and baking, there are many ways to "sneak-in" protein. For example, wheat germ, soy flour, and chopped nuts can be stirred into muffin batter; yogurt or buttermilk added to cold or hot soups; and cheese or nuts sprinkled on salads, casseroles, and soups. Take a look at the high-protein boosters below and add some more of your own: ● chopped peanuts ● toasted almonds ● cashews ● sunflower seeds ● sesame seeds ● wheat germ ● plain yogurt ● chopped hard-cooked eggs ● buttermilk ● shredded cheese ● nonfat dry milk ● soy sauce ● soy grits ● soy flour ● granola cereal ● whole-wheated croutons.

LET THE EATER BEWARE!

While protein might be the major concern of the vegetarian, other nutrients can be escaping his or her attention. Those meatless eaters who also shun dairy products and eggs (the vegans) are particularly risking deficiency in Vitamin D, calcium, and riboflavin. Since B-12 occurs naturally only in animal foods, the strict vegetarian can develop a deficiency in this nutrient as well. Iron can also be a problem. Enriched cereals and grains, along with many fruits and vegetables, do contain this mineral, but the rate of absorption is not very high in plant foods. Strict vegans must therefore increase their intake of dark, leafy green vegetables for their calcium and iron content, soy milk or nutritional yeast for its Vitamin B-12, dry beans and vegetables for their riboflavin, and sunlight for Vitamin D! As a safeguard against marginal deficiencies of these key nutrients, vegetarians can take a vitamin-mineral supplement to meet their RDA's.

One final note of caution—any eating plan that concentrates on just one or a few foods has the danger of being nutritionally inadequate. Of particular concern is the brown-rice-based Zen macrobiotic diet. Deficiencies in Vitamin C, protein, iron, and calcium have been reported in its followers, and several deaths have been linked to this diet. So whatever you and your students opt for a type of vegetarianism or a meat-based menu, be sure to stress that variety is the key to good nutrition and sound health.

"Reprinted from FORECAST for Home Economics (c) February, 1980,
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VITAMINS - AN ALPHABET OF HEALTH
or
"PUT SPRING IN YOUR STEP WITH VITAMINS"

Consumerism (Bus)
History
Home Economics
Social Studies

March

Objective: The student will learn the importance of vitamins in the diet and sources of each.

To The Teacher:

The idea that illness might be caused by the absence of something in the diet was a long time gaining acceptance. It was easy to understand how a person could be poisoned by a toxic substance he ate, but not so easy to realize that the lack of a substance could cause serious illness. It was not until the 20th century when research progressed to the point that these substances could be identified that deficiency diseases were recognized.

Even though today there are few people in America suffering from deficiency disease, there are many who still suffer vitamin deficiency, simply from a lack of knowledge of what the body needs for optimum performance.

Activities:

1. Give class the Vitamin Pre-test. (HELP #1). Discuss answers.

2. Assign each of the vitamins listed below to a student to research. They should investigate its discovery, its function in the body, deficiency symptoms, good food sources, etc. Vitamins A, B (thiamine), B2 (riboflavin), B6 (pyridoxine), B12, B13 (orotic acid), B-complex vitamins viotin and folic acid or folacin, niacin, C (ascorbic acid), D, E, F (unsaturated fatty acids), K, P (bioflavinoids).

3. Share the article Vitamins (HELP #2) with the class and discuss the questions.

4. Determine the economy of choices of food for Vitamin C. Compare the foods by the following categories. Which is most economical?

Which is best source of Vitamin C per serving? How does one serving compare with the RDA your age group?

	Price Per Serving	Vitamin C Per Serving	Additional Ingredients
Powdered Vitamin C drink			
Frozen Orange Juice			
Orange Drink			
Frozen Orange Drink			

5. Play the game "Vitamin Bingo" (HELP #3)

6. Ask the class to give examples of statements attributing special healing powers to certain vitamins. (Example: Vitamin E prevents heart disease.) Read and discuss the article "Myths of Vitamins." (HELP #4)

SOURCES

Food and Nutrition - Time-Life Publication

"V" is for Vitamins. Developed by Bennett School District 29-J, East Central BOCS. Developed with NET Program Funds.

"Myths of Vitamins," FDA Consumer; March 1974, pp. 4-9.

HELP #1

VITAMIN PRETEST

Directions:

Answer each question by circling the word true or false in the right column.

1. Vitamins are found in most foods with some foods richer in vitamins than others. true false

2. Vitamins can be divided into two groups: fat soluble and water soluble vitamins. true false

3. The B vitamins (Thiamine, Riboflavin and Niacin) are essential for proper digestion of foods. true false

4. If you are not eating enough foods rich in vitamin K your blood may not clot after a wound occurs. true false

5. Vitamin A prevents an eye disease called night blindness. true false

6. The common cold can be prevented by taking vitamin C. true false

7. Vitamin B_{12} shots are often prescribed for people who need more energy. true false

8. Vitamin D is useful in treating arthritis. true false

9. Vitamin E has been shown to improve acne, prevent sterility and increase sexual drive. true false

10. Natural vitamins (those found in foods) are better nutritionally for you than synthetic vitamins (those) synthesized in the lab). true false

11. If you eat one of those cereals which has all the vitamins you need every day or take a multiple vitamin pill, it's alright to eat anything you like the rest of the day. true false

12. Eating a variety of foods every day can supply most Americans with all the needed vitamins. true false

13. Vitamin A is destroyed during mild cooking but is not destroyed when a fat containing A turns rancid. true false

14. Vitamin D is generally not destroyed during storage and cooking. true false

15. Vitamin E is destroyed when fats containing E begin to turn rancid or when the fat is used in deep fat frying. true false

16. Vitamin C is easily lost when food is submerged in water during cooking. true false

17. Vitamin C is not destroyed when exposed to air or heat. true false

18. Thiamine (B_1) is easily destroyed by exposure to heat or oxygen. true false

19. Riboflavin (B_2) is easily destroyed by light. true false

20. Niacin (B_6) is one of the most stable B vitamins and is lost mostly by leaching into cooking water. true false

21. Fortified milk, fish liver oils, egg yolk and exposure to sunshine are all good sources of vitamin D. true false

22. Citrus fruits, tomatoes, strawberries and leafy green vegetables are all good sources of vitamin A. true false

23. Vegetable oils and whole grain cereals are best sources of vitamin E. true false

24. Lean meat, fish and poultry, enriched and whole grain breads and cereals, liver and milk are all good sources of the B vitamins. true false

25. Butter, whole milk, liver, eggs and yellow and green leafy vegetables are good sources of vitamin C. true false

VITAMIN PRETEST ANSWER KEY

1. true
2. true
3. true
4. true
5. true
6. false
7. false
8. false
9. false
10. false
11. false
12. true
13. false
14. true
15. true
16. true
17. false
18. true
19. true
20. true
21. true
22. false
23. true
24. true
25. false

HELP#2

VITAMINS

Vitamins are organic compounds necessary for growth and the maintenance of life.

Characteristics of Vitamins

Vitamins are present in food in very small amounts. Most cannot be made by the body, and must be supplied by the foods we eat.

Vitamins contribute to the building of the body's structure and help regulate its processes.

Vitamins in foods are not broken down during digestion, but are absorbed essentially as they occur in foods.

How Vitamins Work in the Body

Without vitamins, the foods we eat could not be put to use. "Vitamins help food move through the pathways of biochemical reactions by which food is broken down and used for energy, repair, and the other essential functions in the body. Food plays a very passive role through all these processes. It merely provides the materials for each step or reaction which takes place along these pathways. There are hundreds of pathways foods can take; pathways which break down carbohydrates, pathways to break down fats and pathways for protein. At every step along the path, the vitamins plus enzymes speed up the breakdown of the foods. (Enzymes are made up of proteins which act on other substances in order to bring about a chemical reaction.) Vitamins are either part of the enzymes or help bring enzymes together with the substances they are working on. Vitamins and enzymes do not change during these chemical reactions. Their job is simply to help speed up the reactions. If there are not enough vitamins in the diet, the pathways do not function properly, and the appropriate biochemical breakdown of foodstuffs does not take place completely." (Laurel's Kitchen, page 395). As a result, cells may be unable to repair themselves with new proteins, energy cannot be provided because foods is not being properly burned and the result is eventual tissue damage, or signs of a vitamin deficiency.

Sources of Vitamins

No one food contains all the vitamins necessary for the body. A variety of foods in the diet will supply most of the vitamins necessary for bodily functions. There are key vitamins and minerals which are seen on the labels of food packages: vitamins A, D, C, thiamin, riboflavin, niacin, and the minerals, calcium and iron. If your diet supplies these essential vitamins and minerals, it is assumed that the other vitamins or minerals will be supplied by the variety of foods in your diet.

Classification of Vitamins

Vitamins fall into two classes according to their solubility; some are soluble in water, others are soluble in fat.

Water-soluble vitamins - B complex vitamins, thiamin, niacin, riboflavin, and vitamin C. Water-soluble vitamins are not stored in the body. They are used only in the necessary amounts and the excess is excreted in the urine. Water-soluble vitamins are absorbed directly into the blood which transports them throughout the body.

Fat-soluble vitamins - A, D, E, K. All fat-soluble vitamins are stored in the body to some extent. They concentrate in the fatty tissues and in the liver. If taken in high doses, some of the fat-soluble vitamins will begin to accumulate and can reach toxic levels. Fat-soluble vitamins are not directly absorbed into the bloodstream. They require dietary fat for absorption and transportation in the body.

QUESTIONS

1. Which of these vitamin groups can be efficiently stored in the body?

   __water soluble vitamins __fat soluble vitamins __no vitamins are stored

2. Water-soluble vitamins are attracted to water (the many positive and negative charges on their surfaces are attracted to the positive and negative ions of water). Which group represents the water-soluble vitamins?

   ___vitamins A, D, E, K ___the vitamin B complex and vitamin C

3. Fat-soluble vitamins are repelled by water but are attracted to uncharged fat-loving compounds. Which group represents the fat-soluble vitamins?

   ___vitamins A, D, E, K ___the vitamin B complex and vitamin C

4. The body's principle transportation system is the bloodstream.

   ____travel freely dissolved in blood;
   ____must be made soluble in water by being attached to carriers such as protein
   Choose from: vitamins A, D, E, K
   the vitamin B complex and vitamin C

5. __________can be toxic if taken in excess doses because they are stored in the body.
   Choose from: vitamins A, D, E, K
   vitamin B complex and vitamin C

6. _________are much less likely to develop toxity when taken in excess because the excess is excreted by the body.
   Choose from: vitamins A, D, E, K
   vitamin B complex and vitamin C

Source: Understanding Nutrition, pages 271-272

answer key: (1) fat soluble (2) vit. B complex and vit. C (3) vit. A D E K (4a) vit. B complex and vit C (4b) vits. A D E K (5) A D E K (6) vit. B complex and vit. C

This material borrowed from the Energy, Food and You curriculum guide, a program of the Washington State Offices of Environmental Education (NW Section) and Health Education.

VITAMIN BINGO:

Directions:

Vitamin Bingo may be played by one or one hundred players. Each person takes a card (see next page) and a handful of markers (corn, etc.) When everyone is ready to start, the teacher reads prepared questions. Several questions are provided below. The teacher may wish to add other questions. The student should mark the box containing the appropriate response. Vitamin Bingo may be called when five successive diagonal or horizontal squares have been covered.

Questions:

1. What is the vitamin needed for healthy tissues and skin as well as normal vision, especially in dim light? (Vitamin A)
2. What are foods rich in Vitamin E? (vegetable oils, whole-grain cereals, nuts and legumes)
3. What are foods rich in vitamin A? (liver, butter, fortified margarine, whole milk, yellow and green leafy vegetables)
4. What is the vitamin needed for clotting of the blood? (Vitamin K)
5. What is the vitamin needed for healthy skin, gums and tissues and healing wounds? (Vitamin C)
6. What foods are rich in the vitamin B Complex? (lean meat, fish, poultry, enriched and whole grain bread and cereals, milk)
7. What is the vitamin needed for absorption of calcium and phosphorous to make strong bones and teeth? (Vitamin D)
8. What foods are rich in vitamin K? (leafy green vegetables, liver and egg yolk)
9. What foods are rich in vitamin C? (citrus fruits, tomatoes, strawberries and cabbage)
10. What is the vitamin needed for normal functioning of the digestive and nervous system? (Vitamin B)
11. What foods are rich in vitamin D? (fish, liver, oils, fortified milk and canned fish)
12. What is the vitamin that promotes the stability of all membranes? (Vitamin E)

VITAMIN BINGO

Vitamin A	Vegetable oil	Poultry	Vitamin K	Whole grain bread and cereal
Fortified margarine	Squash	Spinach	Oranges	Eggs
Carrots	Grapefruit	Lean meat	Citrus fruits	Fish liver oils
Enriched bread and cereals	Citrus juices	Vitamin C	Yellow vegetables	Vitamin E
Exposure to sunlight	Soft drinks	Swiss Chard	Whole-wheat bread	Leafy green vegetables
Whole milk	Cauliflower	Fish	Cabbage	Vitamin K
Vitamin B	Strawberries	Vitamin D	Tomatoes	Butter
Broccoli	Candy	Liver	Egg yolk	Skim milk

HELP #4

MYTHS OF VITAMINS

"Consumers should know that elaborate testimonials and miraculous claims result from mere guesswork, confusion, and often outright fraud."

In today's health-conscious society, many Americans hold myths about the proper role of vitamins. While vitamins are essential for good health, excessive amounts are unnecessary and can be harmful.

by Jane Heenan

Once a day, "just to be sure," millions of Americans take a multivitamin pill. Then, when cold season comes around, some stock up on vitamin C.

Others whose sex lives seem to be lagging may reach for vitamin E, with the added hope that it will stave off heart disease. And if all these vitamins don't prevent that "rundown feeling," they might try a little—or a lot—of all the vitamins, with an added boost of vitamin B$_{12}$.

According to some of the latest "literature" appearing in books by nutrition "experts" and in magazine articles, this sort of therapy should do the trick. But as millions of Americans now know, it doesn't necessarily mean you can even win a tennis match.

And as a 4-year-old boy in Kansas will never forget, taking a whole bottle of 40 children's vitamins at once won't help him grow stronger, faster. He spent the following 2 days in intensive care with vitamin A and iron poisoning. His experience was added to the statistics compiled by FDA's National Clearinghouse for Poison Control Centers which reveal that 4,000 cases of vitamin poisonings are reported each year, with some 3,200 involving children.

Other Americans, with rashes, diarrhea, or headaches, may also be unwary victims of the belief that since vitamins are good for them, the more the better.

Of course, this is just one of the many myths about vitamins that is accepted by many health-conscious Americans. Some of the myths have been with us so long they're difficult to distinguish from fact. For instance, many people will tell you that vitamins provide extra energy. False. Some of the B vitamins do aid in the conversion of food to usable energy, but in amounts greater than the U.S. Recommended Daily Allowance (U.S. RDA), they provide nothing of value. Only people with a relatively rare medically diagnosed deficiency of a vitamin would benefit from an amount greater than the U.S. RDA levels.

FDA has promulgated regulations which are designed to prohibit false and misleading promotional and labeling claims about vitamins and minerals, and to distinguish between vitamins and minerals that are dietary supplements, and those that should be sold as drugs. (See "Vitamins, Minerals, and FDA," *FDA Consumer,* September 1973.) Still, educational efforts are required for the public to be able to know what vitamins can, and cannot, accomplish.

The Daily Multi-Myth

An advertisement on television shows a person explaining how he stays healthy and looking "great." He says he watches his diet, gets plenty of exercise, and, "just to be sure," takes a vitamin-mineral supplement every day.

This is the way we have come to expect the marketing of dietary supplements. They are promoted as an "insurance" policy to guarantee good health. The implication of such advertising has contributed to the myth that even a balanced diet cannot provide adequate nutrients.

Some people have gone further and maintain that modern farming methods have depleted the soil and that food itself no longer contains adequate nutrients.

This is untrue. More is known about the nutrient content of food today than ever before. And more is done, through modern farm practices, to protect and enrich the soil than was even known about in the good old days. Crop rotation, soil tests, and routine enrichment of crop soil were developed because the oft-revered "natural" way of farming was quantitatively and qualitatively unreliable.

In addition, the protein, carbohydrate, fat, fiber and vitamins are controlled primarily by the plant's genetic structure, not by the soil. Excess mineral elements in soil beyond the plant's requirements may be reflected in the plants, but these differences are usually small. Both desirable (magnesium, zinc, iron, etc.) and undesirable (lead, cadmium, selenium, etc.) elements are similarly accumulated.

"Some of the myths have been with us so long they're difficult to distinguish from fact."

A balanced diet which generally meets the U.S. RDA requirements for vitamins A, B$_1$, B$_2$, C, and D will nearly always provide the needed amounts of other vitamins, despite the claims of some people that these other vitamins are hard to find and therefore must be eaten in special foods or taken by pill. Even though eating is a personal thing and the acceptability of foods varies from person to person, it is possible to obtain the U.S. Recommended Daily Allowance (U.S. RDA) in many different diet patterns because of the wide variety of foods containing similar nutrients. But the simplest, surest guide to follow for a good daily balance of nutrients is still the selection of foods from each of four larger groups—milk, meat, vegetable/fruit, and bread/cereal.

There are substances in food which some "experts" glibly term vitamins although they are of no importance in the diet for human nutrition. Examples are inositol, PABA (para-aminobenzoic acid), citrus bioflavonoid complex, hesperidin, and rutin. Many companies have marketed these substances individually or in combination with essential vitamins, but consumers should not be misled by claims for them that ignore the fact that their absence from the diet does not cause a disease or any form of illness.

Foods can and do supply most Americans with adequate nutrients, and consumers should not expect any major physical benefits from multivitamin pills, contrary to the myths.

Much Ado About E

Vitamin E supplements have been found useful in only two conditions—in premature babies who because of poor placental transfer may have received too little of the vitamin before birth, and in persons with intestinal disorders in which fats are poorly absorbed.

This view by the National Academy of Sciences Committee on Nutritional Misinformation is vastly different from claims that have more than doubled the sales of vitamin E in the last 5 years.

Among the latter claims are assertions that the vitamin can promote physical endurance, enhance sexual potency, prevent heart attacks, protect against air pollution, and slow the aging process. But there is virtually no scientific proof for the majority of these claims.

In fact, the new interest in E has been based on misinterpretations of animal research studies: Male rats that deliberately had been deprived of dietary sources of vitamin E became sterile, but the use of large doses in treating human sterility or impotence has not been successful. Similarly, it is known that E is essential to maintain pregnancy, but it has not been found to be a factor in fertility.

One reason so little is know about vitamin E is that E deficiency is almost impossible to produce in human subjects. To withdraw all sources of vitamin E is almost to withdraw food itself, since the vitamin is present to some extent in most foods and in large amounts in vegetable fats and oils.

Discovered about 50 years ago, the vitamin has also been described as a cure, preventive, or treatment of cancer, muscular dystrophy, ulcers, burns, and skin disorders. Again, science does not back this up. In muscular dystrophy patients, for example, no deficiency of vitamin E has been found and large-dosage treatments have been ineffective.

The vitamin has been used in some cosmetics for its antioxidant properties, but one popular new deodorant containing E was recalled last year when widespread incidence of severe rashes were reported after use.

C for Colds?

James Lind, surgeron's mate on the H.M.S. *Sailsbury*, and "the father of nautical medicine," conducted the first properly controlled clinical therapeutic trial on record in 1747. Aboard ship, his experiment determined the value of citrus fruit in the prevention and cure of scurvy.

"Foods can and do supply most Americans with adequate nutrients, and consumers should not expect any major physical benefits from multivitamin pills, contrary to the myth."

Forty-two years later, the Royal Navy adopted the administration of 1 ounce of lemon juice to each man each day. It wiped out scurvy in the Royal Navy and preserved its numbers to the extent that vitamin C is credited with having done as much as Lord Nelson to break the power of Napoleon.

So began the recorded and gradual recognition of vitamin C, which was isolated and so named in 1933.

Today, these things are known about C: It helps hold body cells together and strengthens blood vessels; it helps heal wounds; it helps tooth and bone formation; and it helps in resistance to infection.

It is also known that C does not cure or prevent colds. The claims that C lessens the number and severity of colds remains controversial, for in several clinical studies, subjects who believed they were being given C but who were actually receiving inert tablets reported fewer colds than they expected to have, and, in some cases, those taking C reported no change.

Some research has indicated difficulties associated with large doses of C, including kidney stones, severe diarrhea, and possible harm to diabetics. Also, because the body does pass off excesses of vitamin C, its presence in the urine makes accurate testing for diabetes impossible, since it gives a false indication of sugar levels. At this point, unless a physician has diagnosed vitamin C deficiency, the safe, practical course is to get the U.S. Recommended Daily Allowance of 60 milligrams per day (see table).

B Vitamins

A common belief about B vitamins is that the old "rundown feeling" can easily be overcome by vitamin B$_{12}$ supplements. But unless there is actually a deficiency—which is extremely rare—amounts beyond the U.S. RDA will not be of any benefit to the body, and any apparent effect has been shown to be psychological. In the case where vitamin B$_{12}$ treatment is recommended, when a person actually cannot absorb the vitamin properly, the treatment must be carried out through injections, and it is relatively ineffective when administered orally.

FDA Consumer/March 1974

Another exotic claim for vitamins involves pantothenic acid and is also based on misinterpretation of animal experiments. When a severe deficiency was produced deliberately in male rats, their hair turned grey, and when the process was reversed, the color was restored. From this, some "experts" have deduced that deficiences of pantothenic acid are responsible for greying hair in humans. Although greying hair may occur because of severe deficiency, grey hair per se does not mean a deficiency, since there are many other reasons for the condition. Clinical deficiencies in man are truly rare. There has been no discovery so far to prevent grey hair.

Skimping on protein and overcooking vegetables in water will cut back on the amount of B vitamins in a diet. But a rush of vitamin pills or expensive brewer's yeast does more damage to the budget and offers far fewer benefits to health than consuming a proper selection of foods carefully prepared.

Natural vs. Synthetic

"Getting back to nature" can sometimes be an expensive trip—especially when you wind up where you started. Such is the case for persons paying close to $5 for 100 tablets of vitamin C "from pure rose hips," from acerola cherries, or for a host of combinations with natural but ungermane ingredients, such as honey, when the same amount of pure ascorbic acid can be bought for under $1.

Two major fallacies lie behind the rush for so-called "natural" vitamins: (1) Natural vitamins are superior to those synthesized by man; (2) vitamin products sold as "natural" don't contain synthetic ingredients.

In truth, each vitamin has a particular molecular structure that remains the same whether it's synthesized in a laboratory or extracted from an animal or plant or consumed as part of an animal or plant. To be called "vitamin A," for example, there has to be a specific molecular arrangement that is identical no matter where it is found or how it is derived. The body cannot distinguish in any way between a vitamin from a plant or animal and the same vitamin from a laboratory. Only the pocketbook "knows for sure."

Perhaps even more revealing is that some synthetic ingredients many persons are trying to avoid today are also present in the "natural" products. In processing tablets and capsules, vitamin manufacturers must use excipients and binders, such as ethyl cellulose, Polysorbate 80 (a synthetic emulsifier), as well as gum acacia, etc.

So it comes back down to some basic rules about eating. Your body not only needs vitamins and other nutrients, it needs the bulk and textures of real food. And it needs a *balance* of those foods, a balance that may not be provided in fad dieting or in an endless array of tablets and capsules.

"The implication of advertising has contributed to the myth that even a balanced diet cannot provide adequate nutrients."

Vitamins A and D Toxicity

Vitamins A and D were the first to explode the myth that vitamins are not toxic when administered in doses beyond body requirements.

Excessive amounts of vitamin A taken over long periods can increase the pressure within the human skull and may mimic a brain tumor. In fact, one teenager actually was hospitalized and prepared for brain surgery only to find out the trouble was simply an overdose of vitamin A. Large doses of this vitamin taken over extended periods have also been known to retard growth in children and cause dry and cracked skin, headaches, bone pain, and other symptoms—in fact, almost the same symptoms as for a severe deficiency.

"Many people will tell you that vitamins provide extra energy. False."

March 1974/FDA Consumer

Excessive doses of vitamin D have been known to retard mental as well as physical growth in children. It can also cause nausea, weakness, stiffness, constipation, hypertension, and even death.

Because of this, FDA prohibits, except by prescription, any daily recommended intake of a tablet or capsule of more than 10,000 International Units (IU)* of vitamin A and 400 of vitamin D. While this in no way prevents the consumer from taking as much as he chooses at any one time, it does control the strength and labeling for each package. (See "New Regulations on Vitamins A and D," *FDA Consumer*, October 1973.)

From this regulatory action a new myth may have arisen: That all vitamins are nontoxic except for A and D. In fact, the correct interpretation of this action is that the only conclusive, actionable proof of toxicity so far is with excessive A and D. Medical libraries contain numerous references to adverse side effects from ingestion of high levels of niacin or vitamin C. In addition, the interaction of nutrients within the body is affected by high intakes of certain vitamins and minerals.

Other problems, involving vitamins E, C, and folic acid, have also been reported recently. For instance, there is evidence of a possible antagonistic effect of high intake levels of vitamin C on the nutritional status of A.

As research continues, there will be more answers as to how much is too much of a vitamin, what the entire scope of usefulness of each vitamin is, and which medical conditions may respond well to vitamin therapy. In the meantime, consumers should know that elaborate testimonials, miraculous claims, and vitamins supposedly derived from exotic sources result from mere guesswork, confusion, and, often, outright fraud.

Best Sources

Vitamin A—Fish-liver oils, liver, butter, cream, whole milk, whole-milk cheeses, egg yolk, dark green leafy vegetables, yellow vegetables, yellow fruits, fortified products.

Vitamin D—Fish-liver oils, fortified milk, activated sterols, exposure to sunlight.

Vitamin E—Plant tissues—Wheat germ oil, vegetable oils (such as soybean, corn, and cottonseed), nuts, legumes.

Vitamin K—Green leaves such as spinach, cabbage; cauliflower, and liver.

Vitamin C—Citrus fruits, tomatoes, strawberries, cantaloupe, cabbage, broccoli, kale, potatoes.

Folic acid—Widespread in foods. Liver, kidney, yeast, deep green leafy vegetables are highest sources.

Thiamine—Pork, liver, and other organs, brewer's yeast, wheat germ, whole-grain cereals and breads, enriched cereals and breads, soybeans, peanuts, and other legumes, milk.

Riboflavin—Milk, powdered whey, liver, kidney, heart, meats, eggs, green leafy vegetables, dried vast, enriched foods.

Niacin—Lean meat, fish, poultry, liver, kidney, whole-grain and enriched cereals and breads, green vegetables, peanuts, brewer's yeast.

Vitamin B_6—Wheat germ, meat, liver, kidney, whole-grain cereals, soybeans, peanuts, corn.

Vitamin B_{12}—Amply provided by small daily intakes of animal protein.

Biotin—Liver, sweetbreads, yeast, eggs, legumes.

Pantothenic acid—Almost universally present in plant and animal tissue. Liver, kidney, yeast, eggs, peanuts, whole-grain cereals, beef, tomatoes, broccoli, salmon.

Choline—Egg yolk is best source. Liver, heart, sweetbreads, milk, meats, nuts, cereals, vegetables, soybeans.

— U.S. RDA's For Vitamins —

	Unit of measurement*	Infants	Children under 4 years of age	Adults and children 4 or more years of age	Pregnant or lactating women
Vitamin A	International units	1,500	2,500	5,000	8,000
Vitamin D	"	400	400	400	400
Vitamin E	"	5	10	30	30
Vitamin C	Milligrams	35	40	60	60
Folic acid	"	0.1	0.2	0.4	0.8
Thiamine	"	0.5	0.7	1.5	1.7
Riboflavin	"	0.6	0.8	1.7	2.0
Niacin	"	8	9	20	20
Vitamin B_6	"	0.4	0.7	2.0	2.5
Vitamin B_{12}	Micrograms	2	3	6	8
Biotin	Milligrams	0.15	0.15	0.30	0.30
Pantothenic —acid	"	3	5	10	10

*The Internation Units are no longer used as a unit of measurement of U.S. RDA'S effective October, 1979

BE WISE BEWARE....
DON'T BE A SNACK FOOD FOOL...

Art
Business
Communications
English
Home Economics

April

Objective: Snacks can be delicious and nutritious too.

To The Teacher:

Snacking has become a way of life for most Americans. It stands to reason, then, that if we give more thought to providing wholesome and nutritious snacks they could help provide some of our daily nutritional requirements. Many of us choose high caloried, low nutrient "fillers" to get us from meal to meal while others try to be more choosey and select a product that may be from several of the basic four food groups but is still heavy on the sugar and fat. It's time to take stock of our snacks and what's available to us. Read over (HELP #1) Good Nutritious Snacks - The Basic Four Food Groups.

Activities:

1. Conduct a classroom poll to find out:
   a. When most kids snack
   b. What snack foods are most popular.

   List findings on the board and then discuss using the following questions.

   a. Is there a common time when most people snack? Why might this be so?
   b. What seems to be the most popular snack food? Is that food nutritious or just full of empty calories.
   c. What suggestions are there for healthful snack foods? List them on the board.

2. Read HELP #2 "Change Your Snack Habits". Add on of your own ideas as number 10. Read aloud in class, who has the best idea?

*Advertising Influences Us

3. Discuss some of the influences that advertizers use to promote food products. What methods do they use to get our attention?

4. Using magazines of various types, newspapers, TV or radio, keep a record of the selling appeals (gimmicks) used on a chart like the one below. Compare what you find in class discussion.

TV	Radio	Printed	Name of Product	Status	Try Something New	Convenience	Sex	Ethnic Bkgrnd	Stereotyping	Nutrition	Other

5. Make a selling "gimmick" of your own for a nutritious snack food.

   a. Magazine - draw your ad
   b. TV - produce your ad
   c. Radio - record your advertisement

SOURCES:

CSU Extension, Colorado Expanded Food and Nutrition Program, 1980

*This material borrowed from the Energy Food and You curriculum guide, a program of the Washington State Offices of Environmental Education (N.W. Section) and Health Education.

MILK GROUP--These snacks will contribute to protein and calcium intake.

1. Milk--1 cup--has the same amount of calcium as 28 hamburger patties.
2. Milk drinks--add fruit to milk and you have a milk float. If thickness is desired, add non-fat dry milk or ice milk.
3. Ice milk
4. Cheese (and fruits)
5. Cheese (and crackers)
6. Puddings, custards, and yogurt
7. Cottage cheese (with fruit or vegetables)
8. Hot chocolate milk made with non-fat dry milk

FRUIT AND VEGETABLE GROUP--These are low in calories and are good sources of vitamin C and A

1. Fruit juices without sugar added
2. Raw fruits--oranges, grapefruits, bananas, apples
3. Raw vegetables--carrot sticks, celery, raw cauliflower, pepper sticks

MEAT AND PROTEIN GROUP--Rich in iron, protein and B vitamins

1. Peanut butter sandwiches--limit the jelly, if used, as it is high in calories due to the sugar content.
2. Burritos--use leftover beans and tortillas with tomato salsa.
3. Hard-boiled eggs--these can be cooked ahead of time.
4. Sandwiches with leftover meat.
5. Nuts and sunflower seeds.

BREADS AND BREAD GROUP--Good sources of iron and B vitamins

1. Cereals, especially cream-of-wheat, oatmeal, atole or chaquegue.
2. Ready-to-eat cereals--beware of the high sugar content in many.
3. Enriched crackers with cheese and/or meats.
4. Breads and cookies--especially those made with peanut butter, molasses, pumpkin, bananas, carrots, and dried fruits.
5. Granola

Avoid the following snacks: (They are HIGH IN CALORIES, LOW IN NUTRIENTS AND EXPENSIVE. Overconsumption could lead to tooth decay or overweight.)

1. Potato chips--are high in fat and salt.
2. Iced cakes and sweet rolls--high in calories and fat.
3. Soda Pop--all the calories come from sugar.
4. Corn chips--high in fat and salt.
5. Candy--high in calories, fat and very expensive.
6. Powdered soft drinks--all the calories come from sugar.

Developed by C.S.U. Extension for use in Colorado Expanded Food and Nutrition Education Program - 1980

CHANGE YOUR SNACK HABITS

1. Keep in mind that snacks are a part of your regular nutrition - not just an addition to your normal food intake.

2. Make a list of good foods to snack on. Stay away from high-calorie/high-sugar foods as well as too many salty or fatty snacks.

3. If you make desserts, add less sugar than called for or use natural sweeteners such as fruit or juices.

4. If cookies are a must. . .have oatmeal, raisin or peanut butter. These contain more nutrient sources and are better for you than less nutrient dense cookies or handfuls of candy.

5. Go easy on those soft drinks, they supply primarily calories.

6. Remember eating food with a high sugar content can become a habit. You can avoid this by changing your eating habits and cutting back or eliminating a source of unnecessary sugar every day.

7. Think of alternatives to eat in situations where you usually consume high calorie snacks. Example: fresh fruit is lower in calories than a bag of french fries or potato chips. Raw vegetables are better than a malted milk shake!

8. Experiment by trying new herbs or low calorie dressings on your salads or fresh fruit slices instead of rich desserts! Take the monotony out of food - do something different.

9. Be sure to stay a step ahead of yourself. Keep good quality snacks on hand so when the hungries strike, you are ready!

THE PERFECT PROTEIN
or
IT'S ALL IN A SHELL

Art
English
Health
Home Economics
Social Studies

April

Objective: Understanding nature's most perfect protein food. . .the egg.

To The Teacher:

The egg has been called the most complete protein. It is an excellent source of other nutrients as well. . .vitamins A, B2, D, iron and phosphorus.

Why then are we eating less eggs? Probably due to the fact that they are synonomous with breakfast and more working mothers are opting for the convenience of ready-to-eat cereals for the family; and partly due to the attention which has been focused on the egg's high cholesterol content.

This lesson focuses on the versatile egg and the ease with which young people can prepare delicious egg dishes.

Activities:

Class Discussion

1. Let's get a count - How many eat eggs for breakfast? How often? Why? Why not? What other meals feature egg dishes such as souffles, or Quiche Lorraine? How about egg desserts? (Puddings, custards?) Do you eat eggs for snacks?

Using References

2. What is the structure of the egg - name the parts, draw a chart and label each part. What nutrients does each part contain?
3. Find information on the history of egg decorating. Write a report to share with the class. Be sure to list references.
4. Bring eggs you have decorated or invite a member of the community who is known for decorating Easter Eggs to speak to the class and to demonstrate decorating techniques.

At The Market

5. There is consumer information on the carton. What information does it give the wise buyer? What are the various grades of eggs? What do the grades tell you about the product? Give some general tips on purchasing eggs at the grocery.

6. Share the information about buying eggs with the class in discussion.

In The Kitchen or Lab - Class Demonstration

7. Demonstrate how to break open an egg. Using several grades of eggs - show differences on the outside as well as how the interior of each may differ.
8. Explain why eggs are essential in many recipes - What function do they serve in the following? Pudding, French Toast, souffles and sponge cake. If you don't know the answers, where can you find them?
9. If possible, demonstrate how to cook a simple egg dish (scrambled, fried, or omelet) or, choose a simple egg dish and prepare it at home for yourself or your family. Report to the class on the outcome of your culinary efforts.
10. Develop your own classroom "egg cookbook". Don't forget to include recipes for using up hard boiled Easter eggs - they should be in plentiful supply at this time. (They make very good snacks!)
11. Prepare an ethnic egg dish for your family. Then have your family rate your cooking and the recipe. (Make up the rating sheet in class beforehand.)
12. S-T-R-E-T C-H Your Imagination! You are opening your own fast food establishment which features eggs. Name your restaurant and make up the menu.

SOURCES:

*Brewster & Jackson, The Changing American Diet, Center for Science in the Public Interest, 1755 So. St. Washington, D.C. 20009, 1978, Pg. 20.

THE BASIC FOUR FOOD GROUPS
or
CHOOSE 4 4 FITNESS

Biology
Ind. Arts
Health
Home Economics
Science
Social Studies

May

Objective: The student will learn to analyze his own diet and how to make choices to improve it.

To The Teacher:

Today we are bombarded by food. We live in a land of plenty, and yet many people are malnourished because they make poor food choices. Nutrition experts have made good nutrition a simple task by devising the "food group" system. If you select some food from each of these groups each day, you can be relatively sure of getting some of all the essential nutrients. The USDA proposed the Four Food Groups in 1955 - the milk group, the meat group, the vegetable and fruit group and the bread and cereal group. They are listed below with typical foods in each group.

MILK	MEAT	VEG.-FRUIT	BREAD-CEREAL
Milk Cheese Ice Cream	Meat Fish Poultry Eggs Nuts	All fruits & veg. except peas and beans which belong to meat group.	Wheat Rice Corn All types of bread

You will note that carbohydrates and fats are not included in the Basic Four. It is felt that Americans consume more than enough of these without making a special group of them. They compliment but do not replace foods from the four groups. Amounts consumed of these should be determined by individual caloric needs.

Let's send our students into summer better educated to make the right food choices.

Activities:

1. Analyze the food habits of your own family. Without trying to make any change, simply keep a record of the amount and kind of food each family member eats for a period of one week. (Record sheet-Appendix 1). Compare the results with the recommended quantities of food in the moderate cost family plan included in this lesson. How well does your family's diet compare with the recommended diet? (HELP #1)

2. The camping season will soon begin. You are planning a three-day camping trip with your family. It is your responsibility to plan the menu for the trip. You will have available a small campstove or perhaps a solar cooker, but no refrigeration facilities. Write the 3-day menu plan making sure that the family's nutritional needs will be met according to the Basic Four. As an extra project, you might construct your own solar cooker. (See plans included with the lesson (HELP #2).

3. Using two rats, provide one with a balanced diet, the other with low nutrient density foods (such as processed snack foods and soft drinks). Keep accurate records of foods eaten, the rats' weight, appearance and activity. Discuss results.

4. Record all TV commercials you see in a week's viewing that advertise food. Identify the techniques and "gimmicks" used to induce the public to buy this product. Could you maintain a balanced diet if you ate nothing but what is advertised on TV? The same project could be done in class with food-oriented magazines. Would the results be the same? What are the most heavily advertised foods? Where does the money come from that pays for these ads? How much does the average TV ad cost? What is the relationship between the type of food being advertised and the time of day or night it is being shown?

5. Crossword Puzzle (HELP #3).

6. Nutrition and Notable Characters (HELP #4)

SOURCES:

Food For Health. Developed by Limon School District RE4-J. East Central BOCS. Developed with NET Program Funds.

Newton, David. Nutrition Today. J. Weston Walsh, Publishers, Portland, Maine.

Oklahoma Energy Awareness Education Resource Materials, Oklahoma State Department of Education.

National Dairy Council

"Nutrition and Notable Characters", What's New in Home Economics, Sept.,1973

From Nutrition Today by David E. Newton; Copyright 1973, J. Weston Walch, Publisher, Portland, Maine 04104.

MODERATE-COST FAMILY FOOD PLAN

Sex-age group	Weekly quantities of food [1] for each member of family																			
	Milk, cheese, ice cream [2]	Meat, poultry, fish [3]		Eggs	Dry beans, peas, nuts		Flour, cereals, baked goods [4]		Citrus fruit, tomatoes		Dark-green and deep-yellow vegetables		Potatoes		Other vegetables and fruits		Fats, oils		Sugars, sweets	
	Qt.	*Lb.*	*Oz.*	*No.*	*Lb.*	*Oz.*	*Lb.*	*Oz.*	*Lb.*	*Oz.*	*Lb.*	*Oz.*	*Lb.*	*Oz.*	*Lb.*	*Oz.*	*Lb.*	*Oz.*	*Lb.*	*Oz.*
Children:																				
7 months to 1 year	6	1	4	6	0	0	0	12	1	8	0	2	0	8	1	8	0	1	0	2
1-3 years	6	1	12	6	0	1	1	0	1	8	0	4	0	12	2	12	0	4	0	4
4-6 years	6	2	4	6	0	1	1	12	2	0	0	4	1	0	4	0	0	6	0	10
7-9 years	6	3	0	7	0	2	2	0	2	4	0	8	1	12	4	12	0	10	0	14
10-12 years	6½	4	0	7	0	4	2	12	2	8	0	12	2	4	5	8	0	10	0	14
Girls:																				
13-15 years	7	4	8	7	0	2	2	12	2	8	0	12	2	4	5	12	0	12	0	14
16-19 years	7	4	4	7	0	2	2	8	2	8	0	12	2	0	5	8	0	10	0	12
Boys:																				
13-15 years	7	4	12	7	0	4	4	0	2	12	0	12	3	0	6	0	0	14	1	0
16-19 years	7	5	8	7	0	6	5	0	3	0	0	12	4	4	6	4	1	2	1	2
Women:																				
20-34 years	3½	4	4	6	0	2	2	4	2	8	0	12	1	8	5	12	0	8	0	14
35-54 years	3½	4	4	6	0	2	2	0	2	8	0	12	1	4	5	4	0	8	0	12
55-74 years	3½	4	4	6	0	2	1	12	2	4	0	12	1	4	4	4	0	6	0	8
75 years and over	3½	3	12	6	0	2	1	12	2	4	0	12	1	0	3	12	0	6	0	8
Pregnant	7	4	4	7	0	2	2	4	3	8	1	8	1	8	5	12	0	8	0	12
Nursing	10	5	0	7	0	2	2	12	5	0	1	8	2	12	6	4	0	12	0	12
Men:																				
20-34 years	3½	5	8	7	0	4	4	0	2	12	0	12	3	0	6	8	1	0	1	4
35-54 years	3½	5	4	7	0	4	3	8	2	12	0	12	2	8	5	12	0	14	1	0
55-74 years	3½	5	0	7	0	2	3	4	2	12	0	12	2	4	5	8	0	12	0	14
75 years and over	3½	5	0	7	0	2	2	12	2	8	0	12	2	0	5	4	0	10	0	12
Total																				

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[1] Food as purchased or brought into the kitchen from garden or farm.

[2] Fluid whole or its calcium equivalent in cheese, evaporated milk, dry milk, ice cream (see p. 3).

[3] Bacon and salt pork should not exceed ⅓ pound for each 5 pounds of meat group.

[4] Weight in terms of flour and cereal. Count 1⅓ pounds bread as 1 pound flour.

HELP #1

HELP #2

SOLAR COOKER

MATERIALS: Large paper clips, rubber cement, umbrella, poster board, aluminum foil, skillet (black all over), oven thermometer, and food to cook.

Cost--$5.00 - $7.00

ACTIVITY: Open the umbrella, measure the panels and cut new panels out of poster board large enough to overlap slightly. Cover each poster board panel with rubber cement then heavy-weight aluminum foil. Use paper clips to mount these panels inside the open umbrella. Measure the radius of the umbrella. Cut off the handle to the same length as the radius of the umbrella. (A string may be used to measure the radius.) Use this pointer to direct the umbrella toward the sun. Locate the hot spot (focal point). Put the skillet over the hottest spot and cook some food. To increase efficiency, cut a hole in a paper plate the size of the pointer, cover the plate with foil and lay it over the pointer pushing it down to the center of the umbrella. This helps hold the panels in place.

Example: If the diameter of the umbrella is 36 inches then the length of the pointer should be 18 inches. (radius = $\frac{\text{diameter}}{2}$).

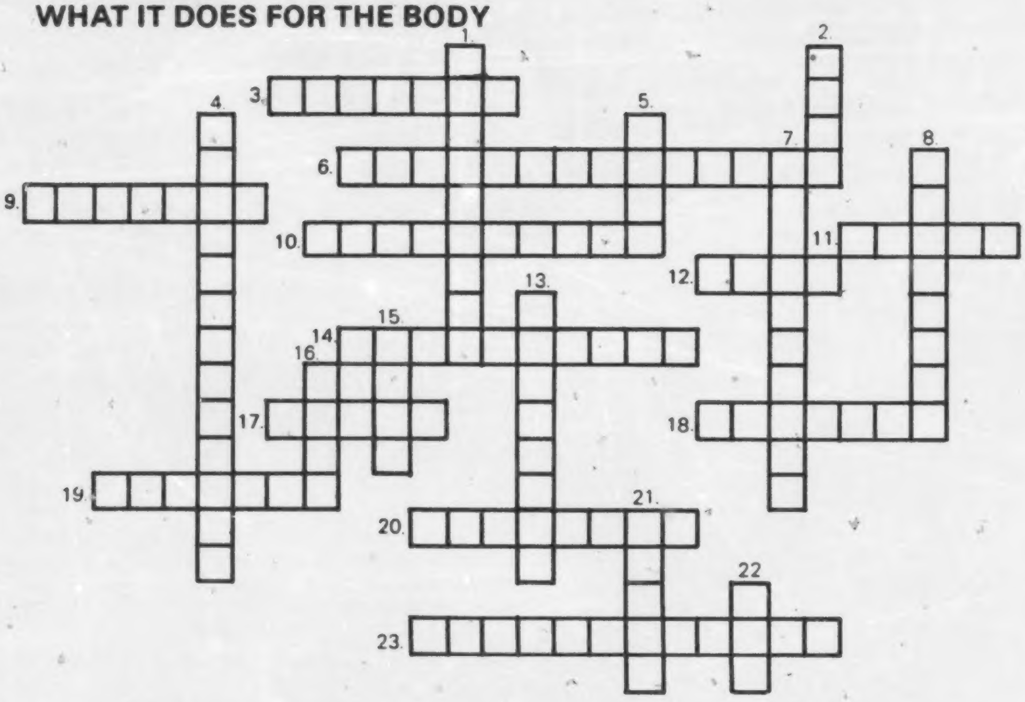
Paper plate covered with foil.

SOURCE: Oklahoma Energy Awareness Education Resource Materials, Oklahoma State Department of Education

NAME________________________

HELP #3

5. THE SCIENCE OF FOOD AND WHAT IT DOES FOR THE BODY



Is nutrition information puzzling you? It shouldn't. Actually, the principles are very basic. Here's a crossword puzzle. Each of the clues is about nutrition. When you're finished, you'll have a good summary of food facts.

ACROSS

3 A mineral in milk which helps build strong bones and teeth.

6 A useful guide for planning meals to include all nutrients. (3 words)

9 In the meat group of the four food groups. Often less expensive than meat and lower in calories, but equally rich in protein. Duck, capon, turkey, and chicken are some types.

10 Escarole, carrots, and beets are some examples. Can be eaten fresh or cooked, contain plenty of vitamins and some minerals. A few are rich in protein too.

11 Liquid which helps regulate body temperature. Everyone should have plenty every day.

12 Contains a good amount of iodine, is low in calories and a great source of protein. Is included in the meat group of the four food groups.

14 Parts of protein. There are twenty-two of these parts and at least eight are called "essential." (2 words)

17 A food product rich in carbohydrates. Used for sandwiches.

18 Oatmeal is one. Rich in carbohydrates and many of the B vitamins. Popular with milk for breakfast.

19 A nutrient which makes up 15-20% of the human body and is part of all cells and tissues.

20 Sometimes called the "structural framework" of the body because these are the major part of bones and teeth. Some are also used to make healthy blood and other body fluids. iron, calcium and phosphorus are some examples.

23 All the foods a person eats to provide a good supply of the vitamins, minerals, protein, and other nutrients needed for good health. (2 words)

DOWN

1. The science of food as it relates to optimal health and performance.

2. Food substances which do not dissolve in water. These nutrients add flavor and carry fat-soluble vitamins throughout the body.

4. Nutrients contained in many foods, especially in the bread and cereal group of the four food groups.

5. Products of chickens which are popular for breakfast. Contain plenty of protein and vitamin A.

7. Works together with #3 across to build strong bones and teeth.

8. A group of nutrients which help all other nutrients do their job. Usually known by letter names, for example, A, B, C, D.

13. Measures of energy provided by food. Everyone needs different amounts depending on age, body size, and amount of activity. Dieters count them.

15. A food product rich in protein, the nutrient necessary for building and repairing body tissues. Beef, pork, and veal are some types.

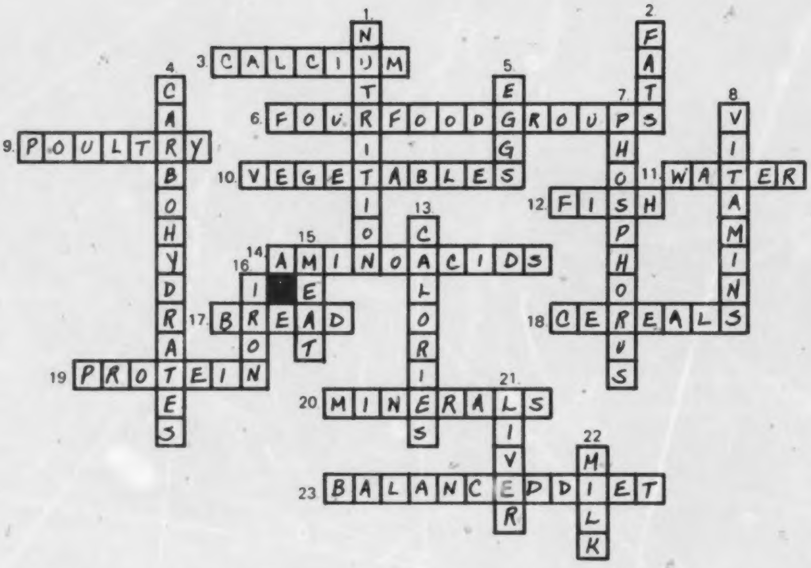
16. Needed for making hemoglobin in the blood. Liver is a good source of this nutrient, which anemic people need in a regular, high-level supply.

21. A variety meat that is rich in many nutrients, especially iron. Often served with bacon or fried onions.

22. Beverage from animals which is rich in protein and minerals.

Courtesy, Food: A Super Natural Resource, National Dairy Council

Copyright 1975, National Dairy Council and The Milk Foundation, Inc. Chicago 60018. All rights reserved. Printed in U.S.A.


1 NUTRITION
2 FATS
3 CALCIUM
4 CARBOHYDRATES
5 EGGS
6 FOURFOODGROUPS
7 PHOSPHORUS
8 VITAMINS
9 POULTRY
10 VEGETABLES
11 WATER
12 FISH
13 CALORIES
14 AMINOACIDS
15 MEAT
16 IRON
17 BREAD
18 CEREALS
19 PROTEIN
20 MINERALS
21 LIVER
22 MILK
23 BALANCEDDIET

HELP #4

NUTRITION AND NOTABLE CHARACTERS

Here are some old friends you may remember from your childhood days. Poor things, they need help. You can come to their rescue by filling in the blanks, giving them some needed advice about nutrition.

1. Everyone knows that Humpty Dumpty sat on a wall and that he also took a very great fall. But not everyone knows that some of his teeth were knocked out and that his gums didn't heal because he was lacking vitamin __________.

2. Just as Humpty Dumpty fell off the wall, a crooked man went by. The crooked man had just bought a crooked cat which had rickets because of insufficient vitamin __________.

3. In a home nearby lived five little pigs. One little pig was going to market, one little pig was staying home, one little pig was having roast beef, and one litle pig was having none. The last little pig cried, "Wee, wee, wee!!!" because he knew he needed __________ so that he could grow as big as the other pigs.

4. Three other pigs in the neighborhood were building homes of straw, twigs, and brick. The nervous, huffing, puffing wolf who gave them a hard time was doing so because he needed pork in his diet to get more of the vitamin called __________.

5. Nearby, Jack was making trips up and down the beanstalk to retrieve some of the giant's possessions such as the hen that laid the golden eggs. Jack especially treasured these golden eggs, because he knew their rich, yellow yolks contained vitamin __________ that he and his mother needed.

6. In the distant meadow, Little Boy Blue should have been looking after his sheep, but instead he was under the haystack fast asleep. Perhaps Boy Blue couldn't stay awake because he was suffering from anemia due to insufficient __________ in his diet.

7. Walking through the woods, Little Red Riding Hood could be seen on her way to grandmother's house. In the basket of food she was bringing to her grandmother, there were several oranges. Red Riding Hood's mother, who packed the oranges in the basket, knew these were a good source of vitamin __________, which grandmother needed every day.

8. Next door to grandmother's house, Little Tommy Tucker was singing for his supper. He usually had white bread and butter. Let's hope his bread was enriched with the B-complex vitamins: thiamine, riboflavin, and __________.

9. In the same town, Cinderella lived with her three stepsisters. Cinderella spent most of her days working inside the dark, dingy house. Because she seldom had the opportunity to get outside in the sunshine and since her stepmother did not buy fortified milk, Cinderella was probably lacking sufficient vitamin __________.

10. On a tuffet near Cinderella's house, Little Ms. Muffet sat eating her curds and whey. It's unfortunate that a spider frightened her away because, like all growing girls, she needed __________ from milk that day.

11. The hill behind Ms. Muffet's house was the scene of a tragic accident. Jack had fallen down and broken his crown, and Jill had come tumbling after. Both Jack and Jill were severely cut. Let's hope they had been eating food with sufficient vitamin _____ so their blood would clot quickly.

12. Jack and Jill were fortunate not to live in Old Mother Hubbard's house. When she went to the cupboard she usually found it bare. There was not a single serving in her cupboard from any of the _________ Groups.

13. Goldilocks knew it would be useless to go into Mother Hubbard's house. Instead, she made a visit to the home of the three bears who had gone out and left their porridge to cool. After eating the little small, wee bear's porridge, Goldilocks knew that she had eaten one of her four servings from the _________ group for that day.

14. Even Goldilocks knew that Jack Sprat and his wife had terrible table manners because they licked their platter clean. It was well-known that Jack would eat no fat and his wife would eat no lean. Therefore, it can be seen that only Jack was getting enough protein from the _________Group every day.

15. Little Jack Horner sat in a corner of the Sprat's house and when he had eaten a plum proudly said, "What a good boy am I." He knew he had just had one of his four servings from the _________ Group for that day.

16. The pretty maid, who was a friend of Little Jack Horner's was walking down the road when she met a handsome stranger who asked, "What is your father, my pretty maid?" She replied that her father was a dairy farmer who helped provide the townspeople with their daily requirement from the _________ Group.

17. The pretty maid's father often employed the butcher, the baker, and the candlestick maker to churn his butter. They worked very hard to provide the townspeople with this form of _________, which helped to make their foods more appealing. As they churned, they often hummed "Rub-a-dub-dub, three men in a tub."

18. The Queen of Hearts used some of this butter to make her tarts. When baking, she frequently sampled her goodies and eventually became as round as the tarts. She would be wise to begin to limit her _________ so she could lose weight and get into her favorite dress again--the one she planned to wear to the fair.

19. One of the Queen's subjects was Simple Simon who met a pieman replied, "My pies are full of energy and contain lots of starches and sugar. These are forms of _________ which will give you energy to enjoy the fair."

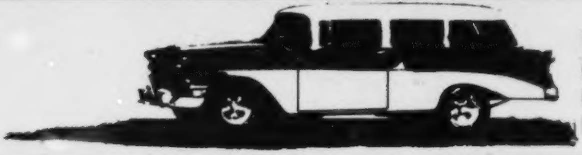
20. Polly put the kettle on to make her friends some tea. She knew this would contribute to the eight glasses of _________ or its equivalent that they should have every day. However, Sulkey took the kettle off and told Polly, "Your friends have gone away. They've gone into town to help Humpty Dumpty put himself together again."

Valerie M. Chamberlain and Joan Kelly, Associate Professors, Department of Human Economics Education, Texas Tech University, Lubbock. What's New in Home Economics, September 1973.

NUTRITION AND NOTABLE CHARACTERS

ANSWER KEY

1. C
2. D
3. Protein
4. Thiamin
5. A
6. Iron
7. C
8. Niacin
9. D
10. Calcium
11. K
12. Basic Four Food
13. Cereal
14. Meat
15. Fruit and Vegetable
16. Milk
17. Fat
18. Calories
19. Carbohydrates
20. Water



FAST FOOD
OR
GRANDMA DIDN'T HAVE A DRIVE-UP WINDOW.

Art
Geography
History
Math
Music
Social Studies

May

Objective: The student will investigate the advisability of too frequent visits to fast-food restaurants but also will learn to choose wisely when eating at such an establishment.

To The Teacher:

Americans spend less time working in the home to feed themselves due to available transportation, media, entertainment, and recreation facilities and increased leisure time. Each member has social and work responsibilities outside the home. The traditional family dinner has become almost a thing of the past as more and more meals are a necessity "sandwiched" in between other activities. By 1980, it is estimated that 50% of meals will be eaten away from home. The pleasures of preparing food together and sharing both food and conversation have too often been sacrificed for the illusory liberation of convenience and speed. Ads encourage us to try the newest and easiest food available. Shared responsibility and simple food preparation, judiciously using labor-saving devices and wholesome foods are viable options that no one advertises. The superior taste and nutritive value of unprocessed foods can make the American Meal the valued time it should be.

Activities:

1. Have students prepare a list of questions for patrons at a fast food restaurant.
    a. Choose sites for the survey - various parts of town at different hours of the day. (Be sure to obtain approval from the management. Good public relations is helpful.)

    b. For a sample questionnaire see HELP #1. You might wish to add other questions.

    c. Have students summarize and discuss results of survey.

2. Have students discuss familiar advertising jingles then compose an original musical jingle that advertises a fast-food restaurant. What is usually stressed in this type of advertising? Why is it so easy to remember?

3. Have students collect pictures, cartoons and ads and form a collage showing The American Way of Eating. (Use as title of collage.) Each student will explain his choices.

4. Have students find pictures of food preparation equipment that is no longer used in the home. (If the student knows an antique collector, he might find the actual article.) Or the teacher could invite the collector to come to class and bring some of these types of items. Have the student write an ad that might have appeared in the newspaper promoting that article when it was in use in the home. Reproductions of old catalogs are available now. These would be interesting resource material. Compose an ad for the piece of electrical equipment or convenience food that makes the article obsolete.

5. Have the student research a given area of time to find what food preparation equipment was in common use. (Example: Romans, Pilgrims, American Indians, etc.) How did this limit the kind of food served? What were the staples of their diet? Did they have a well balanced diet? How did their geographic location, transportation, religious beliefs, etc. affect their diet? Do these things affect what we eat also?

6. Hand out assignment "McDonald's Meets McGovern" (HELP #2).

SOURCES:

Energy, Food, and You curriculum guide, a program of the Washington State Offices of Environmental Education (N.W. Section) and Health Education.

Katz, Deborah and Goodwin, Mary T., Food: Where Nutrition, Politics and Culture Meet, Center for Science in the Public Interest, Washington D.C. 1976.

SAMPLE SURVEY OF PATRONS AT FAST-FOOD RESTAURANT

Student's Name: ____________________________

Site: ______________________________________

Time: ______________________________________

Questions:

1. Why did you choose to come here today?
2. How often do you eat at similar restaurants?
3. On what occasions?
4. Did you come for a meal or a snack?
5. Do you prefer this to a home-cooked meal?
6. Do you believe it is a nutritious meal? Why?

Student observations:

1. Approximate age of patron
2. Are they alone, in peer group, or family group?
3. How long do they spend eating their meal?
4. Why is restaurant located where it is?

McDonald's Meets McGovern

ACTIVITY:

1. Review metric units of weight so that students are familiar with milligrams, grams, and kilograms.

   1 kilogram (kg) = 1,000 grams (gm or g)
   1 gram (gm) = 1,000 milligrams (mg)
   1 milligram (mg) = 1,000 micrograms (μg)

   Refer to the accompanying chart entitled "Nutritional Analyses of Fast Foods" and point out that the headings of various nutrients are in units of weight.

2. Review the synopsis of the U.S. Dietary Goals recommended by the U.S. Senate Committee on Nutrition and Human Needs, 1977. (See Appendix VII, p. 156)

3. Choose one food from the chart "Nutritional Analyses of Fast Foods" and compile the number of Calories that come from the fat content of the food. Remember that 1 gram fat = 9 Calories. For example:

   McDonald's Quarter Pounder with Cheese:
   29 grams fat x 9 Calories = 261 Calories

4. Using the sample example, find what percentage of the total Calories comes from fat. (See also page 291).

   $$\frac{\text{Fat Calories}}{\text{Total Calories}} \quad \frac{261}{518} = 50\%$$

5. Now compare the percentage of fat with the recommended percentage given in the Dietary Goals for the U.S. (Caution: The Goals specify recommendations for overall consumption, not for individual foods, yet the specific examples may indicate patterns of consumption).

   Recommended Amount of Energy from Fat = 30%
   Computed Actual Amount of Energy from Fat = 50%
   Excess = 20%

6. Follow the same procedure for carbohydrates and proteins for selected foods. Remember that 1 gram carbohydrates = 4 Calories.

   McDonald's Quarter Pounder with Cheese:
   34 grams carbohydrate x 4 Calories = 136 Calories

   $$\frac{\text{Carbohydrate Calories}}{\text{Total Calories}} \quad \frac{136}{518} = 26\%$$

   Recommended Amount of Energy from Carbo. = 58%
   Computed Actual Amount of Energy from Carbo. = 26%
   Deficiency = 32%

7. Again refer to the Chart "Nutritional Analyses of Fast Foods" to see; a) which companies do not state the amounts of cholesterol in their products; b) which foods eaten in one meal might total up to the recommended amount for one day. The Dietary Goals (see #4) recommend lowering cholesterol consumption to about 300 mg. per day.

8. Refer to the chart again to see; a) which companies do not list the amounts of sodium contained in their products; b) what percentage of the recommended 3 grams do various foods represent. e.g.

Burger King Cheeseburger = 562 mg = .562 grams sodium

$$\frac{.562 \text{ grams}}{3.0 \text{ grams}} = 19\%$$

McDonald's Big Mac = 962 mg = .962 grams sodium

$$\frac{.962 \text{ grams}}{3.0 \text{ grams}} = 32\%$$

9. Using Appendix 2 in the back of this book, look up (use the correct gender/age group) the RDA for Protein, Vitamin A, and the B Vitamins, etc. Compare these with the amounts present in foods selected from the "Nutritional Analyses of Fast Foods" chart. For example:

	Calories (keal)		Protein (g)		Vit. A (IU)		Vit. B_1 (mg)		Vit. B_2 (mg)		Niacin (mg)		etc.	
RDA for Males 15-18	3000		54		5000		1.5		1.8		20			
		% RDA		% RDA		% RDA		% RDA		% RDA		% RDA		% RDA
Dairy Queen Banana split	540	18	10	19	750	15	.60	40	.60	33	.8	4		
Dairy Queen Chocolate Malt	840	28	22	40	750	15	.15	10	.85	47	1.2	6		

Compare the percentages for Calories with the percentages of B vitamins, etc., provided.

10. Discuss which other ingredients of banana splits, chocolate malts, hamburgers, etc., do not appear on any of these charts. For example: various preservatives, colorings, stabilizers, etc. Discuss why these ingredients are not shown on such lists as the RDA. Individual students may want to write to the fast food companies to obtain a complete list of the ingredients of the products they have already partially analyzed.

NUTRITIONAL ANALYSES OF CERTAIN FAST FOODS

Food		Choles-terol	Calories	Protein	Fat	Carbo-hydrates	Calcium	Iron	Vit. A	B Complex			Vit. C	Sodium NA	Phos-phorus P
										B_1 Thiamine	B_2 Riboflavin	Niacin			
	Weight Grams	Milli-Grams	Calories	Grams	Grams	Grams	Milli-Grams	Milli-Grams	Inter-national Grams	Milli-Grams	Milli-Grams	Milli-Grams	Milli-Grams	Milli-Grams	Milli-Grams
Burger King Cheeseburger	?	?	305	17	13	29	141	2.0	195	01	02	2 20	9	562	229
Burger King Hot Dog	?	?	291	11	17	23	40	2.0	0	04	02	2.00	0	841	117
Dairy Queen Banana Split	383	?	540	10	15	91	350	1.8	750	60	60	.8	18	?	250
Dairy Queen Chocolate dipped cone (1g)	234	?	450	10	20	58	300	0.4	400	.12	.51	tr	tr	?	200
Diary Queen Chocolate Malt (1g)	588	?	840	22	28	125	600	5.4	750	15	85	1.2	6.0	?	600
Dairy Queen Choc. Sundae, (1g)	248	?	400	9	9	71	300	1.8	400	09	.43	4	tr	?	250
Kentucky Fried Dinner 3 pcs chicken, pot gravy, cole slaw, roll	425	285	830	52	46	56	150	4.5	750	38	56	15	27	2285	?
McDonald's Big Mac	187	75	541	26	31	39	175	4.3	327	35	37	8.2	2.4	962	215
McDonald's Quarter Pounder with cheese	193	94	518	31	29	34	251	4.6	683	.35	59	15.1	2.9	1209	257
McDonald's Cho. Shake	289	29	364	11	9	60	338	0.2	318	12	89	0.8	2.9	329	292
McDonald's French Fries	69	10	211	3	11	26	10	0.5	52	15	03	2.9	11.0	113	49

? means information not provided by source (companies)

Source: *Dietetic Currents.* **Vol. 5 #6, Sept.-Oct., '78, Ross Laboratories, Columbus, Ohio 42316.**

This material borrowed from the *Energy, Food, and You* curriculum guide, a program of the Washington State Offices of Environmental Education (N.W. Section) and Health Education.

APPENDIX I

DIET WEEK.

APPENDIX I

NAME ____________________ GRADE __________ ROOM __________

DATE ____________________ DAY OF WEEK ____________________

BREAKFAST	LUNCH	DINNER	SNACKS

Food Group Servings:

Milk/Dairy __________
Meat/Fish __________
Fruit/Veg. __________
Bread/Cereal __________

Number of sugary snacks:
______

DATE ____________________ DAY OF WEEK ____________________

BREAKFAST	LUNCH	DINNER	SNACKS

Food Group Servings:

Milk/Dairy __________
Meat/Fish __________
Fruit/Veg. __________
Bread/Cereal __________

Number of sugary snacks:
______

DATE ____________________ DAY OF WEEK ____________________

BREAKFAST	LUNCH	DINNER	SNACKS

Food Group Servings:

Milk/Dairy __________
Meat/Fish __________
Fruit/Veg. __________
Bread/Cereal __________

Number of sugary snacks:
______

DATE ____________________ DAY OF WEEK ____________________

BREAKFAST	LUNCH	DINNER	SNACKS

Food Group Servings:

Milk/Dairy __________
Meat/Fish __________
Fruit/Veg. __________
Bread/Cereal __________

Number of sugary snacks:
______

These materials were developed through funds from the Nutrition Education and Training Program (PL 96-166) and are available to anyone without regard to race, creed, color.

APPENDIX 2

Nutritive Values in Common Portions of Food*

Pct = Percent
Cal = Calorie
Gm = Gram
Mg = Milligram
IU = International Unit
Tr = Trace, or an insignificant quantity
— = No value imputed, but possibly present

*From *Nutritive Value of Foods*, Home and Garden Bulletin 72, Revised Sept. 1961. Adapted from the more comprehensive tables in "*Composition of Foods — Raw, Processed, Prepared*," Agriculture Handbook No. 8, Revised Dec. 1963. Both are for sale by the Superintendent of Documents, Washington 25, D.C.

FOOD AND APPROXIMATE MEASURE OR COMMON WEIGHT	WATER	FOOD ENERGY	PROTEIN	FAT	TOTAL CARBOHYDRATE	CALCIUM	IRON	VITAMIN A VALUE	THIAMINE	RIBOFLAVIN	NIACIN VALUE	ASCORBIC ACID
	Pct.	Cal.	Gm.	Gm.	Gm.	Mg.	Mg.	I.U.	Mg.	Mg.	Mg.	Mg.
MILK AND MILK PRODUCTS												
Buttermilk, from skim milk, 1 cup	90	90	9	Tr	13	298	0.1	10	0.09	0.44	0.2	2
Milk, cow												
Fluid, whole, 1 cup	87	160	9	9	12	288	1	350	08	42	1	2
Fluid, nonfat (skim), 1 cup	90	90	9	Tr	13	298	1	10	10	44	.2	2
Evaporated (undiluted), 1 cup	74	345	18	20	24	635	3	820	10	84	5	3
Condensed (undiluted), 1 cup	27	980	25	27	166	802	[illegible]	1,090	23	1.17	5	3
Cheese, 1 ounce												
Cheddar (1 in. cube)	37	70	4	5	Tr	128	2	220	Tr	08	Tr.	0
Cheddar, processed	40	105	7	9	1	219	.3	350	Tr.	12	Tr.	0
Cottage, from skim milk, uncreamed	79	25	5	Tr	1	26	1	Tr	01	08	Tr.	0
Cream	51	105	2	11	1	18	1	440	Tr	07	Tr.	0
Swiss	39	105	8	8	1	262	3	320	Tr	11	Tr.	0
Cream, 1 tablespoon												
Light	72	30	Tr	3	1	15	Tr	130	Tr	.02	Tr.	Tr.
Heavy	57	55	Tr	6	Tr.	11	Tr	230	Tr	02	Tr.	Tr.
Beverages, 1 cup												
Cocoa (all milk)	79	235	9	11	26	286	9	390	09	45	.4	2
Malted milk	78	280	13	12	32	364	8	670	17	56	.2	2
Desserts												
Custard, baked, 1 cup	77	285	13	14	28	278	1.0	870	10	47	.2	1
Ice cream, plain												
1/8 of quart brick	62	145	3	9	15	87	.1	370	03	13	.1	1
8 fluid ounces	62	295	6	18	29	175	1	740	06	27	.1	1
EGGS												
Eggs, raw, large												
1 whole	74	80	6	6	Tr.	27	1.1	590	05	15	Tr.	0
1 white	88	15	4	Tr	Tr.	3	Tr.	0	Tr	09	Tr	0
1 yolk	51	60	3	5	Tr	24	9	580	04	.07	Tr.	0
FRUITS												
Apples, raw, 1 medium (2 1/2 in. diam., about 3 per lb.)	85	70	Tr.	Tr	18	8	4	50	04	02	.1	3
Apple juice, fresh or canned, 1 cup	88	120	Tr	Tr	30	15	1.5		04	01	.2	2
Applesauce, canned, sweetened, 1 cup	76	230	1	Tr	60	10	1.3	100	05	03	1	3
Apricots												
Dried, cooked, unsweetened, fruit and liquid, 1 cup	76	240	5	1	62	63	5.1	8,550	01	13	2.8	8
Avocados, raw, 1/2 peeled fruit	74	185	2	18	6	11	6	310	12	21	1.7	15
Bananas, raw, 1 medium (6 by 1 1/2 in., about 3 per lb.)	76	85	1	Tr	23	8	7	[illegible]	05	06	7	10
Blackberries, raw, 1 cup	84	85	2	1	19	46	1.3	290	05	06	5	30
Blueberries, raw, 1 cup	83	85	1	1	21	21	1.4	140	04	08	6	20
Cantaloupes, raw, 1/2 melon (5 in. diam.)	91	60	1	Tr	14	27	8	6,540	08	06	1.2	63
Cherries, [illegible] cup pitted												
Canned, red sour	76	230	2	1	59	36	8	1,680	07	06	4	13
Cranberry sauce, sweetened, 1 cup	62	405	Tr	1	104	17	6	40	03	03	1	5
Dates, fresh and dried, pitted and cut, 1 cup	22	400	4	1	130	105	5.3	90	16	17	3.9	0
Fruit cocktail, canned solids and liquid, 1 cup	80	195	1	1	50	23	1.0	360	04	03	1.1	5
Grapefruit, raw, sections, 1 cup	89	75	1	Tr	20	31	8	20	07	03	3	72
Grapefruit juice												
Canned, unsweetened, 1 cup	89	100	1	Tr	24	20	1.0	20	07	04	4	84
Frozen concentrate, 6-ounce can	62	300	4	1	72	70	8	60	29	12	1.4	286

FOOD AND APPROXIMATE MEASURE OR COMMON WEIGHT	WATER	FOOD ENERGY	PROTEIN	FAT	TOTAL CARBOHYDRATE	CALCIUM	IRON	VITAMIN A VALUE	THIAMINE	RIBOFLAVIN	NIACIN VALUE	ASCORBIC ACID
	Pct	Cal	Gm	Gm	Gm	Mg	Mg	I U	Mg	Mg	Mg	Mg
FRUITS – continued												
Grapes, 1 cup												
American type (slip skin)	82	65	1	1	15	15	4	100	05	03	2	3
Grape juice, bottled, 1 cup	83	165	1	Tr	42	28	8	—	10	05	6	Tr
Lemon juice, fresh, 1 cup	91	60	1	Tr	20	17	5	40	08	03	2	113
Lime juice, fresh, 1 cup	90	65	1	Tr	22	22	5	30	05	03	3	80
Oranges, 1 medium (3 in. diam.)	86	75	1	Tr	19	67	3	310	16	06	6	70
Orange juice												
Fresh, Florida, 1 cup	90	100	1	Tr	23	25	5	490	22	06	9	127
Canned, unsweetened, 1 cup	87	120	2	Tr	28	25	1 0	500	17	05	6	100
Frozen concentrate, 6-ounce can	58	330	5	Tr	80	69	8	1 490	63	10	2 4	332
Peaches												
Raw, 1 medium (2 in. diam., about 4 per lb.)	89	35	1	Tr	10	9	5	1 320	02	05	1 0	7
Canned in syrup, 1 cup	79	200	1	Tr	52	10	8	1 100	02	06	1 4	7
Pears												
Raw, 1 pear (3 by 2 1/2 in. diam.)	83	100	1	1	25	13	5	30	04	07	2	7
Canned in syrup, 2 medium size halves and 2 tablespoons syrup	80	90	Tr	Tr	23	6	2	Tr	01	02	2	2
Pineapple												
Raw, diced, 1 cup	85	75	1	Tr	19	24	7	100	12	04	3	24
Canned in syrup, 2 small or large slice and 2 tablespoons juice	80	90	Tr	Tr	24	13	4	50	09	03	2	8
Pineapple juice, canned, 1 cup	86	135	1	Tr	34	37	7	120	12	04	5	22
Plums, raw, 1 plum, (2 in. diam.)	87	25	Tr	Tr	7	7	3	140	02	02	3	3
Prunes, cooked, unsweetened, 1 cup (16-18 prunes and 1/3 cup liquid)	66	295	2	1	78	60	4 5	1 860	08	18	1 7	2
Prune juice, canned, 1 cup	80	200	1	Tr	49	36	10 5	—	02	03	1 1	4
Raisins, dried, 1 cup	18	460	4	Tr	124	99	5 6	30	18	13	9	2
Raspberries, red, raw, 1 cup	84	70	1	1	17	27	1 1	160	04	11	1 1	31
Rhubarb, cooked with sugar, 1 cup	63	385	1	Tr	98	212	1 6	220	06	15	7	17
Strawberries												
Raw, 1 cup	90	55	1	1	13	31	1 5	90	04	10	1 0	88
Frozen, 10-ounce carton	71	310	1	1	79	40	2 0	90	06	17	1 5	150
Tangerines, 1 medium (2 1/2 in. diam., about 4 per lb.)	87	40	1	Tr	10	34	3	350	05	02	1	26
Watermelons, 1 wedge (4 x 8 in.)	93	115	2	1	27	30	2 1	2.510	13	13	7	30
CEREAL – BREAD												
Biscuits, enriched flour, 1 biscuit (2 1/2 in. diam.)	27	140	3	6	17	46	6	Tr	08	08	7	Tr
Bran flakes, 1 ounce	3	85	3	1	23	20	1 2	0	11	05	1 7	0
Breads, 1 slice												
Boston brown, unenriched	45	100	3	1	22	43	9	0	05	03	6	0
Rye (1/3 rye, 2/3 wheat)	36	55	2	Tr	12	17	4	0	04	02	3	0
White, unenriched, 4 percent non-fat milk solids	36	45	1	1	9	14	1	Tr	01	01	2	Tr
White, enriched, 4 percent nonfat milk solids	36	45	1	1	9	14	4	Tr	04	04	4	Tr
Whole wheat	36	55	2	1	11	23	5	Tr	06	03	7	Tr
Cakes												
Angel food, 2-inch sector	32	110	3	Tr	24	4	1	0	Tr	06	4	0
Doughnuts, cake-type, 1 doughnut	24	125	1	6	16	13	4	30	05	05	4	Tr
Gingerbread, 1 piece (2 by 2 by 2 in.)	31	175	2	6	29	37	1 3	50	06	06	5	0
Plain cake and cupcakes, 1 cupcake (2 3/4 in. diam.)	24	145	2	6	22	26	2	70	01	03	1	Tr
Sponge, 2-inch sector (1/12 of cake, 8 in. diam.)	32	120	3	2	22	12	5	180	02	06	1	Tr
Cookies, plain and assorted, 1 3-inch	3	120	1	5	18	9	2	20	01	01	1	Tr
Cornbread or muffins made with enriched, degermed corn meal, 1 muffin (2 3/4 in. diam.)	33	150	3	5	23	50	8	80	09	11	8	Tr
Corn flakes, 1 ounce	4	110	2	Tr	24	5	4	0	12	02	6	0
Crackers												
Graham, 4 small or 2 medium	6	55	1	1	10	6	2	0	01	03	2	0
Soda, plain, 2 crackers (2 1/2 in. diam.)	4	50	1	1	8	2	2	0	Tr	Tr	1	0
Farina, enriched, cooked, 1 cup	90	100	3	Tr	21	10	7	0	11	07	1 0	0

APPENDIX 2

FOOD AND APPROXIMATE MEASURE OR COMMON WEIGHT	WATER	FOOD ENERGY	PROTEIN	FAT	TOTAL CARBOHYDRATE	CALCIUM	IRON	VITAMIN A VALUE	THIAMINE	RIBOFLAVIN	NIACIN VALUE	ASCORBIC ACID
	Pct.	Cal.	Gm.	Gm.	Gm.	Mg.	Mg.	I.U.	Mg.	Mg.	Mg.	Mg.
CEREAL – BREAD – Continued												
Macaroni, cooked, 1 cup												
Unenriched	64	190	6	1	39	14	6	0	02	02	5	0
Enriched	64	190	6	1	39	14	1 4	0	23	14	1 9	0
Muffins, made with enriched flour, 1 muffin (2 3/4 in. diam.)	38	140	4	5	20	50	8	50	08	11	7	Tr.
Oatmeal or rolled oats												
Cooked, 1 cup	86	130	5	2	23	21	1 4	0	19	05	3	0
Pancakes, baked, wheat, with enriched flour, 1 cake (4 in. diam.)	50	60	2	2	9	27	4	30	05	06	3	Tr.
Pies, 4-inch sector (9 in. diam.)												
Apple	48	345	3	15	51	11	4	40	03	02	5	1
Custard	58	280	8	14	30	125	8	300	07	21	4	0
Lemon meringue	47	305	4	12	45	17	6	200	04	10	2	4
Mince	43	365	3	16	56	38	1 4	Tr	09	05	5	1
Pumpkin	59	275	5	15	32	66	6	3,210	04	13	6	Tr
Pretzels, 5 small sticks	8	20	Tr	Tr	4	1	0	Tr	Tr	Tr	Tr	0
Rice, enriched cooked 1 cup												
Converted, long-grain, parboiled	73	185	4	Tr	41	33	1 4	0	19	02	2 0	0
White or milled	73	185	3	Tr	41	17	1 5	0	19	01	1 6	0
Rice, puffed, 1 cup	4	55	1	Tr	13	3	3	0	06	01	6	0
Rolls, plain, enriched, 1 roll (12 per pound)	31	115	3	2	20	28	7	Tr.	11	07	8	Tr
Spaghetti, unenriched, cooked, 1 cup	72	155	5	1	32	11	6	0	02	02	4	0
Waffles, baked, with enriched flour, 1 waffle (4 1/2 by 5 5/8 by 1/2 in.)	41	210	7	7	28	85	1 3	250	13	19	1 0	Tr.
Wheat flours												
Whole, 1 cup stirred	12	400	16	2	85	49	4 0	0	66	14	5 2	0
All purpose or family flour												
Unenriched, 1 cup sifted	12	400	12	1	84	18	9	0	07	05	1.0	0
Enriched, 1 cup sifted	12	400	12	1	84	18	3 2	0	48	29	3.8	0
Wheat germ, 1 cup stirred	11	245	18	7	32	49	6 4	0	1 36	46	2.9	0
Wheat, shredded, 1 large biscuit, 1 ounce	7	100	3	1	23	12	1 0	0	06	03	1.2	0
VEGETABLES												
Asparagus												
Cooked, 1 cup cut spears	94	35	4	Tr	6	37	1 0	1,580	27	32	2 4	46
Beans, lima, immature, cooked 1 cup, fresh	71	180	12	1	32	75	4 0	450	29	16	2 0	28
Beans, snap, green, cooked, 1 cup	92	30	2	Tr	7	62	8	680	08	11	6	16
Beets, cooked, diced, 1 cup	91	50	2	Tr	12	23	8	40	04	07	5	11
Broccoli, cooked, flower stalks, 1 cup	91	40	5	Tr	7	132	1 2	3,750	14	29	1 2	135
Brussels sprouts, cooked, 1 cup	88	45	5	1	8	42	1 4	680	10	18	1 1	113
Cabbage, 1 cup												
Raw, shreded	92	25	1	Tr	5	49	4	130	05	05	3	47
Cooked	94	35	2	Tr	7	75	5	220	07	07	5	56
Carrots												
Raw, grated, 1 cup	88	45	1	Tr	11	41	8	12,100	06	06	7	9
Cooked, diced, 1 cup	91	45	1	Tr	10	418	9	15,220	08	07	7	9
Cauliflower, cooked, flower buds 1 cup	93	25	3	Tr	5	25	8	70	11	10	7	66
Celery, raw, diced 1 cup	94	15	1	Tr	4	39	3	240	03	03	3	9
Collards, cooked, 1 cup	91	55	5	1	9	289	1 1	10,260	27	37	2 4	87
Corn, sweet												
Cooked, 1 ear (5 in. long)	74	70	3	1	16	2	5	310	09	08	1 0	7
Canned, solids and liquid, 1 cup	81	170	5	2	40	10	1 0	690	07	12	2 3	13
Cucumbers, 10 ounce, raw, pared (7 1/2 x 2 in.)	96	30	1	Tr	7	35	6	Tr.	07	09	4	23
Endive, raw, 2 ounces	93	10	1	Tr.	2	46	1 0	1,870	04	08	3	6
Kale, cooked, 1 cup	91	30	4	1	4	147	1.3	8,140	—	—	—	68
Lettuce, Boston, 1 head, raw (4 in. diam.)	95	30	3	Tr	6	77	4 4	2,130	14	13	6	18
Mushrooms, canned, solids and liquid, 1 cup	93	40	5	Tr	6	15	1 2	Tr.	04	60	4 8	4
Mustard greens, cooked, 1 cup	93	35	3	1	6	193	2 5	8,120	11	19	9	68
Okra, cooked, 8 pods	91	25	2	Tr	5	78	4	120	11	15	8	17
Onions, raw												
Mature, 1 onion (2 1/2 in. diam.)	89	410	2	Tr	10	30	6	40	04	04	2	11
Young green, 6 small onions without tops	88	20	1	Tr	5	20	3	Tr.	02	02	2	12

FOOD AND APPROXIMATE MEASURE OR COMMON WEIGHT	WATER	FOOD ENERGY	PROTEIN	FAT	TOTAL CARBOHYDRATE	CALCIUM	IRON	VITAMIN A VALUE	THIAMINE	RIBOFLAVIN	NIACIN VALUE	ASCORBIC ACID
	Pct	Cal	Gm	Gm	Gm	Mg	Mg	I U	Mg.	Mg	Mg	Mg
VEGETABLES—Continued												
Parsnips, cooked, 1 cup	82	100	2	1	23	70	9	50	11	13	2	16
Peas, green												
Cooked, 1 cup	82	115	9	1	19	37	2.9	860	44	17	3.7	33
Peppers, green, raw, 1 medium	93	15	1	Tr	3	6	4	260	05	05	3	79
Potatoes												
Baked, 1 medium (2 1/2 in. diam.)	75	90	3	Tr	21	9	7	Tr	10	04	1.7	20
Boiled, after peeling, 1 medium (2 1/2 in. diam.)	80	105	3	Tr	23	10	8	Tr	13	05	2.0	22
Boiled in skin, 1 medium (2 1/2 in. diam.)	83	80	2	Tr	18	7	6	Tr	11	04	1.4	20
French-fried, 10 pieces (2 by 1/2 by 1/2 in.)	45	155	2	7	20	9	7	Tr	07	04	1.8	12
Potato chips, 10 medium (2 in. diam.)	2	115	1	8	10	8	4	Tr	04	01	1.0	3
Pumpkin, canned, 1 cup	90	75	2	1	18	57	9	14.590	07	12	1.3	12
Radishes, raw, 4 small	94	5	Tr	Tr	1	12	4	Tr	01	01	1	10
Sauerkraut, canned, drained solids, 1 cup	93	45	2	Tr	9	85	1.2	120	07	09	4	33
Soybean sprouts, raw, 1 cup	89	40	6	2	4	46	7	90	17	16	.8	4
Spinach												
Cooked, 1 cup	92	40	5	1	6	167	4.0	14.580	13	25	1.0	50
Squash												
Summer, cooked, diced, 1 cup	96	30	2	Tr	7	52	8	820	10	16	1.6	21
Winter, baked, mashed, 1 cup	81	130	4	1	32	57	1.6	8.610	10	27	1.4	27
Sweet potatoes, peeled, 1 sweet potato												
Baked (5 by 2 in.)	64	155	2	1	36	44	1.0	8.910	10	07	7	24
Boiled (5 by 2 1/2 in.)	71	170	2	1	39	47	1.0	11.610	13	09	9	25
Tomatoes												
Raw, 1 medium (2 by 2 1/2 in.)	94	35	2	Tr	7	20	0.8	1.350	0.10	0.06	1.0	34
Canned or cooked, 1 cup	94	50	2	Tr	10	15	1.2	2.180	13	07	1.7	40
Tomato juice, canned, 1 cup	94	45	2	Tr	10	17	2.2	1.940	13	07	1.8	39
Turnips, cooked, diced, 1 cup	94	35	1	Tr	8	54	6	Tr.	06	08	5	33
Turnip greens, cooked, 1 cup	93	30	3	Tr	5	267	1.6	9.140	21	36	.8	100
MATURE BEANS AND PEAS, NUTS												
Almonds, shelled, unblanched, 1 cup	5	850	26	77	28	332	6.7	0	34	1.31	5.0	Tr.
Beans, canned or cooked, 1 cup												
Kidney, red	76	230	15	1	42	74	4.6	Tr.	.13	.10	1.5	—
Lima, dried, cooked	64	260	16	1	48	56	5.6	Tr.	.26	.12	1.3	Tr.
Navy or other varieties with Tomato sauce and pork	71	320	16	7	50	141	4.7	340	.20	.08	1.5	5
Tomato sauce, no pork	68	310	16	1	60	177	5.2	160	18	09	1.5	5
Coconut, dried, shredded (sweetened), 1 cup	3	340	2	24	33	10	1.2	0	02	02	.2	0
Peanuts, roasted, shelled, 1 cup	2	840	37	72	27	107	3.0	—	46	.19	24.7	0
Peanut butter, 1 tablespoon	2	95	4	8	3	9	.3	—	02	02	2.4	0
Peas, split, dry, 1 cup, cooked	70	290	20	1	52	28	4.2	100	37	22	2.2	—
Pecans, 1 cup halves	3	740	10	77	16	79	2.6	140	.93	14	1.0	2
Walnuts, English, 1 cup halves	4	650	15	64	16	99	3.1	30	.33	13	9	8
MEAT, POULTRY, FISH												
Beef, 3 ounces, without bone, cooked												
Chuck, lean and fat, braised	53	245	23	16	0	10	2.9	30	04	.18	3.5	—
Hamburger, regular, broiled	54	245	21	17	0	9	2.7	30	07	18	4.6	—
Sirloin, relatively fat, broiled	44	330	20	27	0	9	2.5	50	.05	.16	4.0	—
Beef, dried, 2 ounces	48	115	19	4	0	11	2.9	—	04	.18	2.2	—
Chicken, 3 ounces												
Canned, boned	65	170	18	10	0	18	1.3	200	03	11	3.7	3
Flesh only, broiled	71	115	20	3	0	8	1.4	80	05	.16	7.4	—
Clams, raw, meat only, 3 ounces	82	65	11	1	2	59	5.2	90	08	15	1.1	8
Crab meat, canned or cooked, 3 ounces	77	85	15	2	1	38	7	—	.07	07	1.6	—
Haddock, fried, 1 fillet (4 by 3 by 1/2 in.), 3 ounces	66	140	17	5	5	34	1.0	—	.03	06	2.7	2

APPENDIX 2

FOOD AND APPROXIMATE MEASURE OR COMMON WEIGHT	WATER	FOOD ENERGY	PROTEIN	FAT	TOTAL CARBOHYDRATE	CALCIUM	IRON	VITAMIN A VALUE	THIAMINE	RIBOFLAVIN	NIACIN VALUE	ASCORBIC ACID
	Pct	Cal	Gm	Gm	Gm	Mg	Mg	I.U.	Mg	Mg	Mg	Mg
MEAT, POULTRY, FISH—Continued												
Heart, beef, braised, 3 ounces	61	160	27	5	1	5	5.0	20	21	1.04	6.5	1
Lamb, leg roast, cooked, 3 ounces	54	235	22	16	0	9	1.4	—	13	23	4.7	—
Liver, beef, fried, 2 ounces	57	130	15	6	3	6	5.0	30,280	15	2.37	9.4	15
Oysters, meat only, raw, 1 cup (13 [illegible] medium size oysters, selects)	85	160	20	4	8	226	13.2	740	33	43	6.0	—
[illegible] loin or chops, cooked, 3 ounces without bone	46	310	21	24	0	9	2.7	0	78	22	4.7	—
Pork, cured ham, cooked, 3 ounces without bone	54	245	18	19	0	8	2.2	0	40	16	3.1	—
Pork luncheon meat, canned, spiced, 2 ounces	55	165	8	14	1	5	1.2	0	18	12	1.6	—
Salmon, canned, pink, 3 ounces	71	120	17	5	0	167	7	60	03	16	6.8	—
Sardines, canned in oil, drained solids, 3 ounces	62	175	20	9	0	372	2.5	190	02	17	4.6	—
Shrimp, canned, 3 ounces	70	100	21	1	1	98	2.6	50	01	03	1.5	—
Tuna, canned in oil, drained, 3 ounces	61	170	24	7	0	7	1.6	70	04	10	10.1	—
FATS, OILS, RELATED PRODUCTS												
Bacon, medium fat, broiled or fried, 2 slices	8	100	5	8	1	2	5	0	08	05	.8	—
Butter, 1 tablespoon	16	100	Tr.	11	Tr.	3	0	460	—	—	—	0
Fats, cooking (vegetable fats)												
1 cup	0	1,770	0	200	0	0	0	—	0	0	0	0
1 tablespoon	0	110	0	12	0	0	0	—	0	0	0	0
Lard, 1 tablespoon	0	125	0	14	0	0	0	0	0	0	0	0
Margarine, 1 tablespoon	16	100	Tr	11	Tr	3	0	460	—	—	—	0
Oils, salad or cooking, 1 tablespoon	0	125	0	14	0	0	0	—	0	0	0	0
Salad dressings, 1 tablespoon												
French	39	60	Tr	6	3	2	1	—	—	—	—	—
Home-cooked	68	30	1	2	3	15	1	80	01	03	Tr.	Tr.
Mayonnaise	15	110	Tr	12	Tr	3	.1	40	Tr	01	Tr.	0
SUGARS, SWEETS												
Candy, 1 ounce												
Caramels	8	115	1	3	22	42	4	Tr	01	05	Tr	Tr.
Chocolate, sweetened milk,	1	150	2	9	16	65	.3	80	02	09	.1	Tr.
Fudge, plain	8	115	1	3	21	22	3	Tr	01	03	1	Tr.
Hard	1	110	0	Tr	28	6	5	0	0	0	0	0
Marshmallows	17	90	1	Tr	23	5	5	0	0	Tr	Tr	0
Chocolate syrup, 1 tablespoon	32	50	Tr.	Tr	13	3	.3	—	Tr.	01	.1	0
Honey, strained or extracted 1 tablespoon	17	65	Tr	0	17	1	1	0	Tr.	01	1	Tr.
Jams, marmalades, preserves 1 tablespoon	29	55	Tr	Tr	14	4	2	Tr	Tr	01	Tr.	Tr.
Molasses, cane, 1 tablespoon												
Light	24	50	—	—	13	33	9	—	01	01	Tr	—
Blackstrap	24	45	—	—	11	137	3.2	—	02	01	.4	—
Sugar, 1 tablespoon												
Granulated, cane or beet	Tr.	45	0	0	12	0	Tr	0	0	0	0	0
Brown	2	50	0	0	13	12	5	0	Tr	Tr	Tr.	0
MISCELLANEOUS												
Beverages, carbondated, cola type, 1 cup	90	95	0	0	24	—	—	0	0	0	0	0
Bouillon cubes, 1 cube	4	5	1	Tr	Tr	—	—	—	—	—	—	—
Chocolate, unsweetened, 1 ounce	2	145	3	15	8	22	1.9	20	01	07	.4	0
Gelatin dessert, plain, ready-to-serve, 1 cup	84	140	4	0	34	—	—	—	—	—	—	0
Sherbet, 1 cup	67	260	2	2	59	31	Tr	110	02	06	Tr	1
Yeast												
Compressed, baker's, 1 ounce	71	25	3	Tr	3	4	1.4	Tr	20	47	3.2	Tr
Dried brewer's, 1 tablespoon	5	25	3	Tr	3	17	1.4	Tr	1.25	34	3.0	Tr.

RECOMMENDED DAILY DIETARY ALLOWANCES

	Age	Weight (lbs)	Protein (g)	Vit. A (R.E*)	Vit. D (mg**)	Vit. E (mg T.E) (***)	Vit. C (mg)	Thiamin (mg)	Riboflavin (mg)	Niacin (N.E.) (****)	Vit. B_6 (mg)	Folacin (ug)	Vit. B_{12} (ug)	Calcium (mg)	Phos. (mg)	Mag. (mg)	Iron (mg)	Zinc (mg)	Iodine (ug)
Infants	To 6 mos.	13	kg x 2.2	420	10	3	35	0.3	0.4	6	0.3	30	0.5	360	240	50	10	3	40
	To 1 yr.	20	kg x 2.0	400	10	4	35	0.5	0.6	8	0.6	45	1.5	540	360	70	15	5	50
Children	1-3	29	23	400	10	5	45	0.7	0.8	9	0.9	100	2.0	800	800	150	15	10	70
	4-6	44	30	500	10	6	45	0.9	1.0	11	1.3	200	2.5	800	800	200	10	10	90
	7-10	62	34	700	10	7	45	1.2	1.4	16	1.6	300	3.0	800	800	250	10	10	120
Males	11-14	99	45	1000	10	8	50	1.4	1.6	18	1.8	400	3.0	1200	1200	350	18	15	150
	15-18	145	56	1000	10	10	60	1.4	1.7	18	2.0	400	3.0	1200	1200	400	18	15	150
	19-22	154	56	1000	7.5	10	60	1.5	1.7	19	2.2	400	3.0	800	800	350	10	15	150
	23-50	154	56	1000	5	10	60	1.4	1.6	18	2.2	400	3.0	800	800	350	10	15	150
	51 +	154	56	1000	5	10	60	1.2	1.4	16	2.2	400	3.0	800	800	350	10	15	150
Females	11-14	101	46	800	10	8	50	1.1	1.3	15	1.8	400	3.0	1200	1200	300	18	15	150
	15-18	120	46	800	10	8	60	1.1	1.3	14	2.0	400	3.0	1200	1200	300	18	15	150
	19-22	120	44	800	7.5	8	60	1.1	1.3	14	2.0	400	3.0	800	800	300	18	15	150
	23-50	120	44	800	5	8	60	1.0	1.2	13	2.0	400	3.0	800	800	300	18	15	150
	51 +	120	44	800	5	8	60	1.0	1.2	13	2.0	400	3.0	800	800	300	10	15	150
Pregnant			+30	+200	+5	+2	+20	+0.4	+0.3	+2	+0.6	+400	+1.0	+400	+400	+150	A	+5	+25
Lactating			+20	+400	+5	+3	+40	+0.5	+0.5	+5	+0.5	+100	+1.0	+400	+400	+150	A	+10	+50

A - The increased requirements during pregnancy and lactation cannot be met by the iron content of habitual American diets nor by the existing iron stores of many women; therefore the use 30-60 milligrams of supplemental iron is recommended.

ug. = Microgram

* Retinol equivalents

** Micrograms of cholecaloiflerol 10 ug. cholecalciferol = 400 I.U. Vit. D.

*** tocopherol equivalents

****Niacin equivalents

From: Recommended Dietary Allowances, Revised 1979. Food and Nutrition Board
National Academy of Sciences-National Research Council, Washington, D.C.

	VITAMINS			TRACE ELEMENTS*						ELECTROLYTES		
Age (years)	Vitamin K (μg)	Biotin (μg)	Pantothenic Acid (mg)	Copper (mg)	Manganese (mg)	Fluoride (mg)	Chromium (mg)	Selenium (mg)	Molybdenum (mg)	Sodium (mg)	Potassium (mg)	Chloride (mg)
INFANTS												
0-0.5	12	35	2	0.5-0.7	0.5-0.7	0.1-0.5	0.01-0.04	0.01-0.04	0.03-0.06	115-350	350-925	275-700
0.5-1	10-20	50	3	0.7-1.0	0.7-1.0	0.2-1.0	0.02-0.06	0.02-0.06	0.04-0.08	250-750	425-1275	400-1200
CHILDREN AND ADOLESCENTS												
1-3	15-30	65	3	1.0-1.5	1.0-1.5	0.5-1.5	0.02-0.08	0.02-0.08	0.05-0.1	325-975	550-1650	500-1500
4-6	20-40	85	3-4	1.5-2.0	1.5-2.0	1.0-2.5	0.03-0.12	0.03-0.12	0.06-0.15	450-1350	775-2325	700-2100
7-10	30-60	120	4-5	2.0-2.5	2mp-3.0	1.5-2.5	0.05-0.2	0.05-0.2	0.1 -0.3	600-1600	1000-3000	925-2775
11+	50-100	100-200	4-7	2.0-3.0	2.5-5.0	1.5-2.5	0.05-0.2	0.05-0.2	0.15-0.5	900-2700	1525-4575	1400-4200
ADULTS	70-140	100-200	4-7	2.0-3.0	2.5-5.0	1.5-4.0	0.05-0.2	0.05-0.2	0.15-0.5	1100-3300	1875-5625	1700-5100

*From: Food and Nutrition Board National Academy of Sciences-National Research Council, Washington, D.C.

APPENDIX 4

The following is a listing of free or inexpensive material available to be used with various nutrition education efforts.

1. Nutrition Education, 1976 (Curriculum Guide)
K-6th
Superintendent of Public Instruction
Division of School Food Services
State Capitol
Helena, MT 59601
No Charge
Nutrition Education is a curriculum guide for teachers who wish to expand nutrition education into other subject areas. The basic layout of each section is: 1) a broad, general concept; 2) specific behavioral objectives; 3) teaching aids that answer behavior objectives, as well as supply the teachers with additional information; 4) learning experiences relative to behavioral objectives; and 5) possible subject areas in which learning objectives can be included.

2. Framework for Nutrition Education, 1975 (Curriculum Guide)
K-6th
State Department of Education
School Food Service Section
Division of Administration and Finance
410 State Office Building
Montgomery, AL 36104
$1.00 (K-2nd) Discovering Vegetables
$1.00 (3rd-4th) Food Choices
$1.00 (5th-6th) Nutrition Trek
Each section, K-2nd, 3rd-4th, 5th-6th, contains a sequential portion for learning. Concepts are naturally expanded for the different levels to help strengthen understanding. Learning experiences are suggested for each concept. Evaluations are also included with each objective. This guide may be used in its entirety or selected portions can be chosen.

3. Teaching Nutrition: A Resource Guide for Nutrition Education in the Elementary School, 1974 (Curriculum Guide)
K-6th
New Hampshire Department of Education
State House
Concord, NH 03301
No Charge
A resource guide for nutrition education. It is designed to help integrate nutrition education information within school curriculum. Basic concepts and generalizations are stated and student performances are identified. Participation of school food service managers, the school nurse and other school personnel are necessary for accomplishment of activities. Parental participation is also very important for reinforcement. The material is divided into two units, K-3rd and 4th-6th.

4. Food With Food Facts (Curriculum Guide)
K-3rd
State of Delaware
Department of Public Instruction
Dover, DE 19901
No Charge
A teacher's guide for nutrition education. It is meant to supply some of the resources available for carrying out a good nutrition program. This primary school guide presents an opportunity to involve children in an understanding of nutrition through experiences and activities in the home, school and community.

5. Learning About Nutrition (Curriculum Guide)
Preschool
Illinois State Board of Education
100 North First Street
Springfield, IL 62777
No Charge
A nutrition manual developed to assist day care teachers in their role in instilling positive nutrition habits in children. Each lesson states teaching objectives, activities, teachers' preparation and equipment. Coloring book activities are also included which can be incorporated within any of the lessons.

6. P.A.C. - Nutrition Experience, 1965 (Curriculum Guide)
Preschool
Belleville Public Schools
District #118
Belleville, IL 62220
No Charge
A booklet which is designed to help the classroom teacher introduce good nutrition principles, experiences with major food groups, activities in food preparation and serving methods. Activities are designed to help achieve these goals. Emphasis upon motor skills and language skills are stressed.

7. Try Something New (Curriculum Guide)
9th-12th
New York State College of Human Ecology
c/o Duplicating Services
Ithaca, NY 14850
$3.00
A series of activities and lessons which are directed toward youths between the ages of 9 and 12. Emphasis is placed upon foods that youths prepare and eat and the vitamins they receive everyday. There are 22 lessons available to the teacher, however, it is pointed out that all of these activities need not necessarily be used.

8. A Guide for Financing School Food & Nutrition Services #A200
Author Not Listed
American School Food Service Association
4101 East Iliff Avenue
Denver, CO 80222
$1.00

9. Bibliography of Nutrition and Nutrition Education
Author Not Listed
American School Food Service Association
4101 East Iliff Avenue
Denver, CO 80222
$1.00

APPENDIX 4

TEACHER REFERENCE BOOKS

10. Calories and Weight: The USDA Pocket Guide (AB 362)
Author Not Listed
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402
$1.00

11. Chronology of Nutrition
Author Not Listed
The Nutrition Education Foundation
888 17th Street, N.W.
Washington, D.C. 20006
$1.00

12. Renaissance of Nutrition Education
Author Not Listed
The Nutrition Education Foundation
888 17th Street, N.W.
Washington, D.C. 20006
$1.00

13. Nutrition Science: Overview of American Genius
Author Not Listed
The Nutrition Education Foundation
888 17th Street, N.W.
Washington, D.C. 20006
No Charge

14. Proceedings of Nutrition Education Conference
Author Not Listed
The Nutrition Education Foundation
888 17th Street, N.W.
Washington, D.C. 20006
No Charge

15. Improvement of Nutritive Quality of Foods, A Policy Statement of the Food and Nutrition Board
Author Not Listed
National Academy of Sciences, 1974
Printing and Publishing Office
2101 Constitution Avenue
Washington, D.C. 20037
No Charge

16. Diet and Coronary Heart Disease
A joint statement of the Food and Nutrition Board and the Council on Foods and Nutrition of the A.M.A.
National Academy of Sciences, 1972
Printing and Publishing Office
2101 Constitution Avenue
Washington, D.C. 20037
No Charge

17. Vegetarian Diets
A statement of the Food and Nutrition Board, prepared by the Committee on Nutritional Misinformation
National Academy of Sciences, 1974
Printing and Publishing Office
2101 Constitution Avenue
Washington, D.C. 20037
No Charge

18. School Lunch Worker other Than Director or Supervisor #A300
Author Not Listed
American School Food Service Association
4101 East Iliff Avenue
Denver, CO 80222
$.50

19. Discovering Vegetables, The Nutrition Education Guidebook for School Food Service Managers and Cooperators, 1975 (16 pp.) Curriculum Guide
Food and Nutrition Service
USDA
Federal Building
Rockville, MD 20782
No Charge
Food service managers and cooperators, such as teachers, are provided with sequential learning experiences for introducing children to vegetables in this guide. These activities may be used as a separate unit or integrated into other areas. Recipes and suggested resource materials are included.

20. Teaching the Young Child Good Eating Habits for Life, 2nd ed., 1971 (37 pp.)
Missouri Home Economics Association
Mrs. Joyce Taylor, Executive Secretary
Route 3, Box 170
Fayette, MO 65248
$2.00
The concise and attractive teaching guide for the preschool and primary grades includes basic concepts, a wide variety of activities and references. Creative activities from many disciplines are suggested such as sensory experiences, music, science, dramatics, and art.

21. National Dairy Council's Nutrition Education Materials, 1979
National Dairy Council
6300 North River Road
Rosemont, IL 60018
One copy free to educators
Posters, games, films, pamphlets, comparison cards, and curriculum guides are some of the many valuable nutrition education resources described in this catalogue.

22. The Very Hungry Caterpillar, and Other Stories About Food (21 pp.)
E. Harris, J. Inverso, and J. Needham, 1975
From Albert E. Bedworth, Associate in Health Education
Division of Health and Drug Education Services
Bureau of Health Education
The State Education Department
55 Elk Street, Room 233
Albany, NY 12234
Single copies free, limited quantities available. One hundred delightful books about food are listed in this annotated bibliography. Book selection was based on ability to stimulate children's interest in nutrition and health. Also included are activity suggestions, adult nutrition references, and classroom resources.

23. Discovering a Pattern for a Balanced Diet, A Puzzle Self-Teaching Kit, by H. Spitze. (7 pp.)
Illinois Teacher
351 Education Building
University of Illinois
Urbana, IL 61801
$1.00
This classroom puzzle activity reinforces basic nutrition facts. It is designed to help students learn to evaluate dietary adequacy.

24. Food is More Than Just Something to Eat (32 pp.)
USDA, HEW, the Grocery Manufacturers of America and the Advertising Council
U.S. Government Printing Office
Pueblo, CO 81009
One copy free
This beautifully illustrated, appealing booklet discusses the major nutrients, nutrient needs at different stages of life, nutrition labeling, the Basic Four Food Groups, processed foods, and sociocultural food traditions. The type is large and the text easily understood. It could be used as a learning aid for grades 6-8.

25. Hamburgers and You by J. Tronc and J. Oppert
Illinois Teacher
351 Education Building
University of Illinois
Urbana, IL 61801
Game Kit: $1.00
A puzzle board, 18 page student booklet and a set of answer sheets make up this self-teaching learning aid. The game kit includes concepts and behavorial objectives. It is designed to help students discover that "we are what we eat."

26. How to Use the Comparison Cards to Learn Which Foods Are Best by J. Tronc and J. Oppert (17 pp.)
Illinois Teacher
351 Education Building
University of Illinois
Urbana, IL 61801
$1.00
This self-teaching kit is designed to introduce students to the Dairy Council Comparison Cards. The kit provides learning activities related to understanding the concept of percentage and translating information on comparison cards to solve specific problems.

27. Humpty Dumpty Was an Egg by J. Ikeda and L. Garcia, 1977
Agricultural Sciences Publications
Division of Agricultural Sciences
University of California
Berkeley, CA 94720
No Charge
Teachers of preschool and early primary children should welcome this booklet. It is full of interest-grabbing, fun activities for teaching children about where food comes from, food function, identification, and preparation methods that include tasting experiences. An excellent annotated resource section of food and nutrition teaching materials and children's books is included along with some snack ideas, recipes, and ways to solicit parent involvement.

28. Nutrition Lesson Plans for the Primary Grades, 1976
Dr. Helen Guthrie
College of Human Development
Pennsylvania State University
University Park, PA 16802
Four color posters 24" x 36"; $1.00 each
Sound, appealing activities for introducing the Four Food Groups to grades K-3 are suggested to teachers on the back of these posters which feature foods assembled as college characters. The clear outlining of teaching objectives and activities should encourage elementary teachers with a minimum nutrition training to tackle nutrition education.

29. Primary Grade Nutrition Kit, 1971
National Livestock and Meat Board
444 Michigan Avenue
Chicago, IL 60611
Review set: 2 pamphlets and 8 pp. teacher's guide; $.40; Kit is $2.00 for 30 copies
This teaching kit provides basic nutrition facts and learning activities for primary grades.

30. The Thing the Professor Forgot by General Mills in cooperation with USDA, 1975. (18 pp.)
From U.S. Government Printing Office
Pueblo, CO 81009
One copy free
Professor Eckwoose uses rhymes and pictures to tell children about the Four Food Groups in this delightful booklet. This booklet could be used as a learning aid by primary school children.

31. Rudy & Iron, 10¢, Susie & Calcium, 10¢, Andy and Vitamin A, 15¢, Cindy & Vitamin C 15¢
University of Missouri & Lincoln University
Cooperative Extension Service - 206 Whitten Hall
Columbia, MO 65211
Cost: 10% discount on 10 or more copies, 20% discount on 1,000 or more copies.
Target audience: K-3; good nutrient concepts worked into simple stories; emphasizes nutrients, their food sources, and family roles.

32. Growth Record
Wisconsin Dairy Council
2805 East Washington Avenue
Madison, WI 43704
Cost: $.05
Chart for recording growth, helpful in relating food to growth and health.

33. Guidelines to Good Health & Other Publications
Kraft, Inc.
Department of Consumer Affairs
Box 4611
Chicago, IL 60677
No Charge

A good handout with concise overview of nutrition: through the life cycle, food groups, RDA's, labeling, menu planning, weight control and physical fitness. (TARGET AUDIENCE 7-12, Adult)

34. Personalized Weight Control
Wisconsin Dairy Council
2805 East Washington Avenue
Madison, WI 53704
Cost $.25
Pamphlet contains tips on behavior modification, diet and cooking, suggestions for eating out, exercise.

35. Just Maybe You Need a Body Job
Wisconsin Dairy Council
2805 East Washington Avenue
Madison, WI 53704
Cost: $.15
Pamphlet offers pointers on dieting, getting more exercise, suggestions for prevention of obesity. May be helpful for parent involvement or teacher or food inservice material.

36. Calories: Food and Activity, 1974 by Jean Bonde
8 1/2" x 11", 3 hole punched flip charts
Media Services - Printing
B-10 Martha Van Rensselaer Hall
Cornell University
Ithaca, NY 14853
Cost: $1.00 per complete set
-Calories and Food (12 charts to be colored)
-Calories and Activity (5 colored charts)
The flip charts are to be used on a one-to-one or small group teaching basis. They are designed to help the person who wishes to gain or lose weight become aware of possible changes to make in food and exercise habits to help in controlling body weight.

37. Yardsticks for Nutrition, 1974 by Barbara Fry
Educational packet: Nutrition Card Packet and Teaching Guide (Order additional Nutrient Card Packets for large groups.)
Mailing Room, Building #7
Research Park
Cornell University
Ithaca, NY 14853
Cost: Nutrient Card Packet $1.25: Teaching Guide $.25
An educational packet in full color focusing on iron, Vitamin A, Vitamin C and calcium - the nutrients frequently low in U.S. diets. Packets contain 4 nutrient cards with inserts to adapt the resource for many audiences: preschool educators, school-age children, older youth and adults. The 16-page Teacher's Guide explains the use of the packet and describes 10 youth or adult activities.

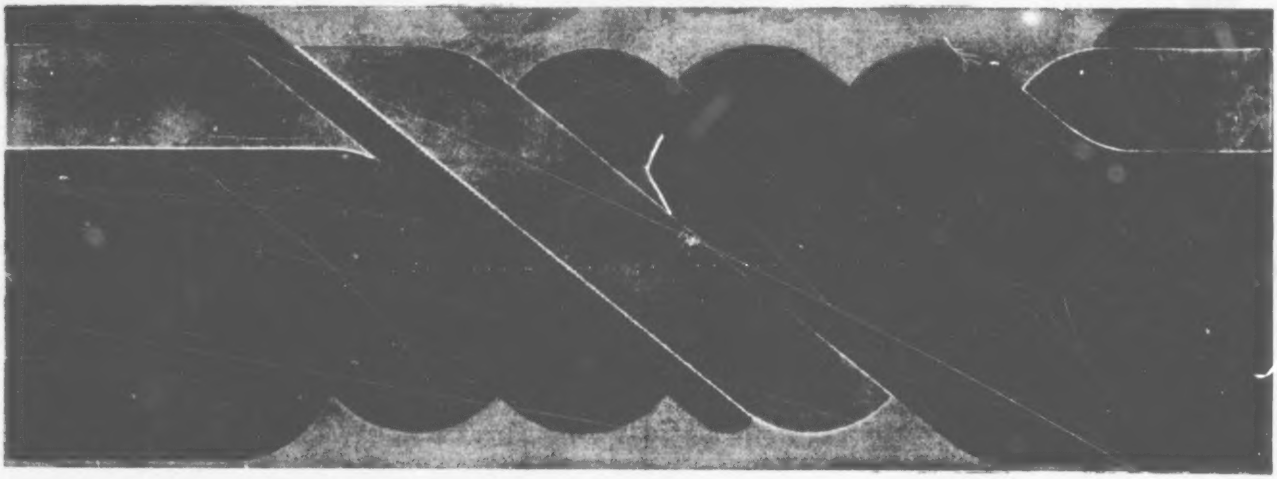
38. Buy and Buy, 1974 by Barbara Fry and Judy Needham
Mailing Room, Building #7
Research Park
Cornell University
Ithaca, NY 14853
Cost: $.55
A Health Education student - centered unit for 9-13 year olds
An activity oriented, student-centered unit for 9-13 year olds focusing on food, a consumer issue. The project facilitates the clarifying of values, understanding of concepts, and internalization of facts within a child's practical world of change, uncertainty, and choice. Additional consumer education, nutrition education and values clarification resources are identified in an annotated bibliography. The unit is designed for a classroom situation, but easily adapted to any youth group.

39. Food - What for? Nutrition for Teenagers, 1968 by Gail Harrison and Ruth Klippstein
Workbook to be used with adolescents and pre-adolescents
Cornell Miscellaneous Bulletin No.94
Mailing Room, Building #7
Research Park
Cornell University
Ithaca, NY 14853
Cost: $.50
This workbook is designed for teachers and leaders who work with adolescents and pre-adolescents. It has a two-fold purpose: first, to provide the teen with sufficient knowledge about nutrition to make sound nutrition decisions when choosing food; and second, to help the teen become aware of the science of nutrition as an exciting and challenging field intimately related to human health and wellbeing.

40. GULP!, 1974 by Martha Mapes
A comic developed for teenagers
Mailing Room, Building #7
Research Park
Cornell University
Itaca, NY 14853
Cost: $.26 per copy
Through an emphasis on the medium (the story which is expressed in the manner of a fantasy comic), GULP! reaches the minds of older youth in a tongue-in-cheek manner. It communicates genuinely, in a way teenagers will accept without skepticism the aspects of nutrition that are of particular interest to the teenager: body image, soft drinks, and fad dieting. Can be used as an individual pick-up piece or for discussion in a group setting.

41. New York State Health Education Curriculum, Nutrition Component, 1970
Media Services - Printing
B-10 Martha Van Rensselaer Hall
Cornell University
Ithaca, NY 14853
Cost: K-6 $1.00; 7-12 $1.00
The Nutrition Curriculum deals with a progression of concepts relevant to the age and comprehension of the child. In conjunction with these concepts, teaching aids and learning activities are suggested and supplementary information for the teacher is given.

BASIC FOOD GROUPS



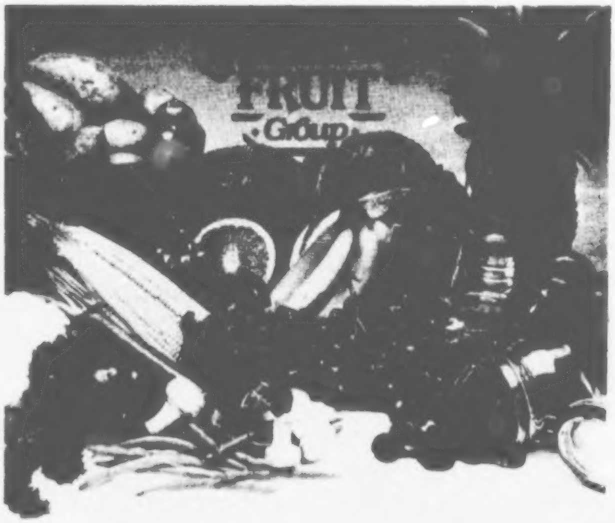
The food we consume can be categorized into five food groups. These groups of foods work together to make up a complete diet, just as a strong rope is composed of strands that intertwine and support each other. Each of the strands symbolize a food group. Four of these groups--Fruit-Vegetable, Bread-Cereal, Milk-Cheese, and Meat-Poultry--supply the vitamins, minerals, and protein, the nutrients the body needs, as well as calories. The fifth group--Fats-Sweets-Alcohol provides mainly calories and its nutritional contribution is more limited than that of other groups.

Servings and Calories

Lower	In-Between	Higher
1 cup raw vegetable salad without dressing (40)	3/4 cup raw vegetable salad with 1 tablespoon French dressing (95)	1/2 cup potato salad (125)
1/2 cup cooked cabbage (15)	1/2 cup coleslaw (60)	2 rolls stuffed cabbage (260)
1 medium baked potato (95)	2/3 cup mashed potatoes prepared with milk and butter (125)	1/2 cup hashed brown potatoes (170)
1 medium raw apple (80)	1 sweetened baked apple (160)	1/8 of 9-inch apple pie (300)
1/2 cup fresh citrus sections (40)	1/2 cup jellied citrus salad (120)	1/2 cup lemon pudding (145)
1/2 cup cooked green beans (15)	1/2 cup stir-fried green beans (35)	1/2 cup green bean-mushroom casserole (70)
1/2 cup diced fresh pineapple (40)	1/2 cup canned pineapple chunks in natural juice (70)	1/2 cup canned pineapple chunks in heavy sirup (95)

VEGETABLE
FRUIT
Group

SERVINGS: 4 or more	Important for contribution of Vitamins A and C and fiber. Dark-green and deep-yellow vegetables are good sources of Vitamin A. Dark-green vegetables, if not overcooked, are reliable sources of Vitamin C as well as riboflavin, folacin, iron, and magnesium. Nearly all vegetables and fruits are low in fat and none contains cholesterol.



MILK CHEESE Group

SERVINGS:
CHILDREN-- (under 9) 2-3 servings
CHILDREN-- (9-12) 3 servings
TEENAGERS-- 4 or more
ADULTS-- 2 or more

Provide calcium and riboflavin; contribute protein and Vitamins A, B_6, and B_{12}. Also provides Vitamin D, when fortified with this vitamin.

MILK
CHEESE
Group

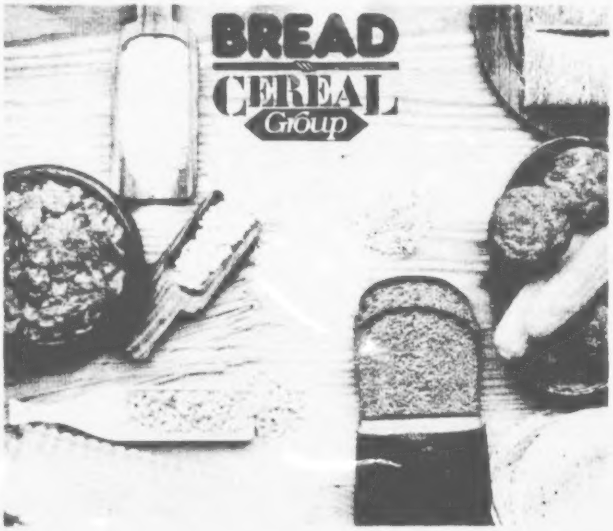
Servings and Calories

Lower	In-Between	Higher
1/2 cup (single dip) ice milk (95)	1/2 cup (single dip) ice cream (135)	1 cup vanilla milkshake (255)
1 oz. Cheddar cheese (115)	1 cup cheese souffle (260)	1 cup macaroni and cheese (430)
8 fl. oz. carton plain lowfat yogurt (145)	8 fl. oz. carton vanilla flavored yogurt (195)	8 fl. oz. carton yogurt with fruit or 2 dips frozen yogurt (225 to 240)

BREAD CEREAL Group

SERVINGS:
4 or more

Important sources of B vitamins and iron. Also provides protein as well as magnesium, folacin, and fiber.



Servings and Calories

Lower	In-Between	Higher
1 cup plain corn flakes (95)	1 cup sugar-coated corn flakes (155)	1/2 cup crunchy cereal (See recipe p.42) (280 to 290)
1/2 cup steamed or boiled rice (85)	1/2 cup fried rice without meat (185)	1/2 cup rice pudding (235)
1 slice of bread (55 to 70)	1 corn muffin (125)	1 Danish pastry (275)
1/2 cup cooked noodles (100)	6 cheese ravioli with sauce (175)	1 cup lasagna (345)

From: "Food," Home and Garden Bulletin #228, prepared by Science and Education Administration, U.S. Department of Agriculture. Copies may be obtained for $3.50 by writing: U.S. Department of Agriculture, Office of Governmental and Public Affairs, Publications Division, Washington, D.C. 20250

Servings and Calories

Lower	In-Between	Higher
2 oz. broiled chicken (95)	1/2 fried chicken breast (2-3/4 oz.) or 2 drumsticks (2-1/2 oz.) (160 to 180)	8 oz. individual chicken pot pie (505)
3 oz. lean hamburger (without bun) (185)	3 oz. regular hamburger (without bun) (235)	3-1/2 oz. cheeseburger (without bun) (320)
3 oz. lean roast beef (205)	3 oz. Swiss steak (315)	2/3 cup beef stroganoff over noodles (525)
2-1/2 oz. broiled cod with butter or margarine (120)	2-1/2 oz. fried, breaded ocean perch (160)	2-1/2 oz. baked stuffed fish (1/2 cup bread stuffing) (325)
1/2 cup boiled navy beans (95)	1 cup navy bean soup (170)	1 cup baked navy beans (310)
3 oz. boiled shrimp (100)	3 oz. fried breaded shrimp (190)	1/2 cup shrimp Newburg (285)

Servings and Calories

Lower	In-Between	Higher
1 teaspoon sugar (15)	2 tablespoons pancake syrup (120)	12 fl. oz. cola (145)
12 fl. oz. light beer or 3-1/2 fl. oz. dry wine (85 to 95)	12 fl. oz. regular beer or 3-1/2 fl. oz. sweet wine (140 to 150)	Tom Collins-- 1 fl. oz. gin & 6 fl. oz. Tom Collins (195)
3 oz. popsicle (70)	1/2 cup (single dip) sherbert (135)	1.2 oz. milk chocolate candy bar (175)

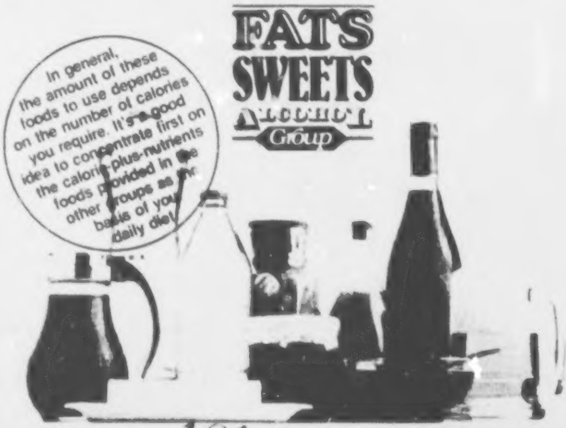
MEAT POULTRY and FISH BEANS GROUP

SERVINGS: 2 or more	Provide protein, phosphorus, Vitamin B_6, B_{12}, and other vitamins and minerals. Red meats and oysters--good sources of zinc, liver and egg yolks--good sources of Vitamin A; dry beans, dry peas, soybeans and nuts are worthwhile sources of magnesium. All meats contain cholesterol which is present in both the lean and fat.

MEAT and Poultry
Fish BEANS
Group

FATS SWEETS ALCOHOL

No serving size is defined because a basic number of servings is not defined for this group.	These products, with some exceptions such as vegetable oils provide mainly calories. Vegetable oils generally supply Vitamin E and essential fatty acids.


FATS
SWEETS
ALCOHOL
Group
In general, the amount of these foods to use depends on the number of calories you require. It's a good idea to concentrate first on the calorie-plus-nutrients foods provided in the other groups as the basis of your daily diet.

APPENDIX 6

NUTRIENT CHART

NUTRIENT	IMPORTANT SOURCES OF NUTRIENT	SOME MAJOR PHYSIOLOGICAL FUNCTIONS
MACRONUTRIENTS		
Protein	Meat, poultry, fish, dried beans and peas, eggs, nuts, cheese, milk	Furnishes amino acids necessary for the building and maintenance of body tissues; provides energy when carbohydrates and fats are lacking.
Carbohydrates	Cereal, cereal products, potatoes, beets, carrots, dried beans, squash, corn, bananas, dates, figs, bread, sugar	Supplies energy so protein can be used for growth and maintenance of body cells, contributes glucose for the brain and central nervous system.
Fat	Shortening, oil, butter, margarine, egg yolks, salad dressing, avocados, olives, nuts	Supplies energy, increases palatability of foods, supplies fatty acids which are essential to the diet.
Water	Water, milk, juices, fruits, vegetables, meats	Helps give structure and form to the body, gives aqueous environment necessary for cell metabolism, provides means for maintaining a stable body temperature.
FAT-SOLUBLE VITAMINS		
Vitamin A (Retinol)	Liver, eggs, dark green and deep yellow vegetables, sweet potatoes, cantaloupe, carrots, squash, butter, margarine	Aids in the prevention of night blindness, controls bone and teeth growth, aids in keeping skin clear and smooth, allows for healthy mucuous membranes and keeps them firm, healthy, and free from infection.
Vitamin D	Vitamin D milk, fish liver oils, eggs, sardines, salmon, tuna, sunshine on skin	Helps absorb calcium from the digestive tract and build calcium and phosphorus into bones and teeth.
Vitamin E	Corn oil, green leafy vegetables, wheat germ, liver, egg yolk, butter, milkfat	Acts as an antioxidant in protecting Vitamin A and unsaturated fatty acids from destruction by oxygen.
WATER-SOLUBLE VITAMINS		
Vitamin C (Ascorbic Acid)	Broccoli, cauliflower, oranges, grapefruits, lemons, limes, papayas, mangoes, stawberries, cantaloupe, tomatoes, green peppers	Makes walls of blood vessels firm, aids in formation of cementing materials that hold body cells together, aids in healing of wounds, broken bones, and possibly helps prevent infection.

NUTRIENT	IMPORTANT SOURCES OF NUTRIENT	SOME MAJOR PHYSIOLOGICAL FUNCTIONS
Thiamine (B_1)	Lean pork, liver, kidney, nuts, wheat germ, whole grain products, fish, poultry, eggs	Aids in the normal functioning of nervous system, plays essential role in digestion and absorption of carbohydrates.
Riboflavin (B_2)	Liver, heart, kidney, milk, cheese, fish, poultry, eggs, dark green vegetables, cottage cheese, dried beans	Enables the cells to better use oxygen, helps keep skin and lips healthy.
Niacin	Peanut butter, meat, poultry, fish, milk, enriched or whole grain breads and cereals, dried beans and peas	Aids in keeping nervous system, skin, mouth, tongue and digestive tract healthy, helps cells use other nutrients.
Vitamin B_6	Beef, liver, pork, ham, soybeans, lima beans, kale, bananas, spinach, avocado, whole grain cereals, potatoes	Lack of this vitamin could result in central nervous system disorders, is necessary for the normal metabolism of proteins.
Folic Acid	Green leafy vegetables, liver, kidney, whole grain cereals, yeast, mushrooms	Aids in the formation of normal blood cells, helps in the function of enzyme and other biochemical systems.
Vitamin B_{12}	Liver, meat, fish, shellfish, kidney, milk, milk products, eggs, poultry, vegetarian diets should include milk or a B_{12} supplement - (if no animal foods are used)	Aids in the formation of normal blood, helps in the maintenance of nerve tissue.
Biotin	Kidney and liver, milk and eggs, molasses, most fresh vegetables, nuts, grains	Regulates the use of carbohydrates and regulates the body in the formation and utilization of fatty acids.
MINERALS		
Calcium	Milk, yogurt, hard cheese, sardines and salmon with bones, collard, kale, mustard, dark green leafy vegetables	Essential in giving strength to bones and teeth, is necessary for clotting of blood, is an important function of normal muscle contraction, assists in response of nerve tissue to stimuli.
Iron	Enriched farina, prune juice, liver, dried beans and peas, red meat, egg yolk	Aids in the formation of hemoglobin which is the red substance in blood responsible for carring oxygen to and carbon dioxide from the cells, aids in the increasing resistance to infection, is involved in enzyme functioning of tissue respiration.
Iodine	Seafoods, iodized salt	Helps regulate the rate at which the body uses energy, aids in the prevention of goiter.

NUTRIENT	IMPORTANT SOURCES OF NUTRIENT	SOME MAJOR PHYSIOLOGICAL FUNCTIONS
Phosphorus	Milk and milk products, meat, poultry, fish, eggs, whole grain cereals, legumes	Helps utilize calcium to provide strong bones and teeth. Many internal activities are regulated by this mineral.
Magnesium	Legumes, whole grain cereals, milk, meat, seafood, nuts, eggs, green vegetables	Aids in carbohydrate regulation and production of energy within the cells, assists in making nerves and muscles work.
Zinc	Meat, liver, eggs, oysters, other seafoods, milk, whole grain cereals, peas, garbanzo beans	Assists in transporting carbon dioxide by the blood and helps to secrete hydrochloric acid in the process of digestion.
Copper	Seafood, meat, eggs, legumes, oysters, cocoa, whole grain cereals, nuts, raisins	Is required for utilizing iron in producing hemoglobin in the blood, is a part of several enzymes that occur in metabolic process.

Reference:

People, Food, and Science, by Patricia Cote, 1972, Ginn and Company.

Laurel's Kitchen, by Laurel Robertson, Carol Flinders, and Bronwen Godfrey, 1976, Nilgiri Press.

NUTRITION AND YOUR HEALTH
DIETARY GUIDELINES FOR AMERICANS

What should you eat to stay healthy?

Hardly a day goes by without someone trying to answer that question. Newspapers, magazines, books, radio, and television give us a lot of advice about what foods we should or should not eat. Unfortunately, much of this advice is confusing.

Some of this confusion exists because we don't know enough about nutrition to identify an "ideal diet" for each individual. People differ - and their food needs vary depending on age, sex, body size, physical activity, and other conditions such as pregnancy or illness.

In those chronic conditions where diet may be important - heart attacks, high blood pressure, strokes, dental caries, diabetes, and some form of cancer - the roles of specific nutrients have not been defined.

Research does seek to find more precise nutritional requirements and to show better the connections between diet and certain chronic diseases.

But today, what advice should you follow in choosing and preparing the best foods for you and your family?

The guidelines below are suggested for most Americans. They do not apply to people who need special diets because of diseases or conditions that interfere with normal nutrition. These people may require special instruction from trained dietitians, in consultation with their own physicians.

These guidelines are intended for people who are already healthy. No guidelines can guarantee health or well-being. Health depends on many things, including heredity, lifestyle, personality traits, mental health and attitudes, and environment, in addition to diet.

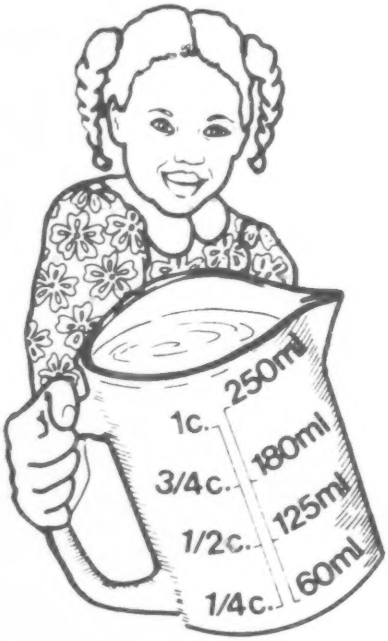
Food alone cannot make you healthy. But good eating habits based on moderation and variety can help keep you healthy and even improve your health.

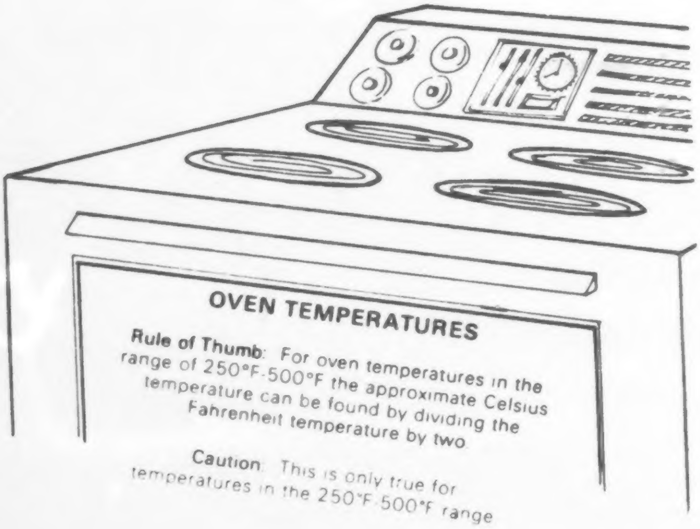
DIETARY GUIDELINES FOR AMERICANS

-Eat a variety of foods
-Maintain ideal weight
-Avoid too much fat, saturated fat, and cholesterol
-Eat foods with adequate starch and fiber
-Avoid too much sugar
-Avoid too much sodium
-If you drink alcohol, do so in moderation

Nutrition Education and Metrics

It should be noted that the metric system is well integrated in nutrition education as seen in the RDA's and nutritional labels that measure in milligrams (mg) and milliliters (ml). Food preparation is another area in which the metric system can be effectively utilized. Typically, the unit of measure for weight is the gram, whereas, the unit of measure for liquids is the liter. By taping the metric equivalents listed below to measuring cups and spoons, the conversion is simplified. Also, in order to facilitate the weighing process for conversion to the gram measurement, the purchase of a scale may be appropriate.

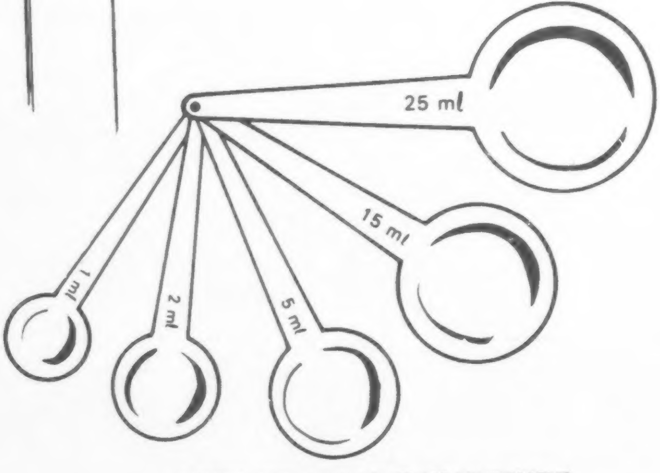




OVEN TEMPERATURES

Rule of Thumb: For oven temperatures in the range of 250°F-500°F the approximate Celsius temperature can be found by dividing the Fahrenheit temperature by two

Caution: This is only true for temperatures in the 250°F-500°F range



SMALL DRY AND LIQUID MEASUREMENT
(1 ml, 2 ml, 5 ml, 15 ml, 25 ml)